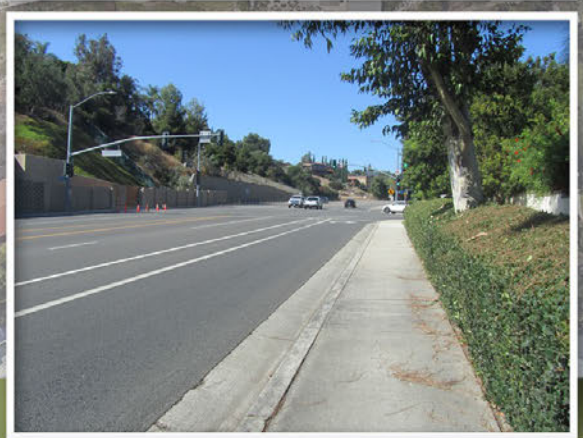
PUBLIC REVIEW DRAFT • NOVEMBER 2020

CANNON ST & SERRANO AVE INTERSECTION IMPROVEMENTS

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION



Prepared for

City of Orange

Prepared by

Michael Baker
INTERNATIONAL

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PUBLIC REVIEW DRAFT

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION NO. 1867-19

CANNON ST & SERRANO AVE INTERSECTION IMPROVEMENTS

LEAD AGENCY:

City of Orange
300 E. Chapman Avenue
Orange, California 92866
Contact: Kevin Yamakawa
714.744.5553

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November 2020

JN 166516

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MITIGATED NEGATIVE DECLARATION NO. 1867-19

Project Title:	**Reference Application Numbers:**
Cannon Street and Serrano Avenue Intersection Improvements	Environmental Document No. 1867-19
Lead Agency:	**Contact Person and Telephone No.:**
City of Orange	Kevin Yamakawa, 714.744.5553
Project Proponent and Address:	**Contact Person and Telephone No.:**
City of Orange	Kevin Yamakawa, 714.744.5553

Project Location: The project site is located at the intersection of Cannon Street and Serrano Avenue.

Existing General Plan Designation:	**Existing Zoning Classification:**
The *City of Orange General Plan* Circulation Element identifies Cannon Street as a "Major Arterial," and Serrano Avenue as a "Primary Arterial." The *City of Villa Park General Plan* Circulation Element identifies Cannon Street as a "Major Arterial" within the project vicinity, and Serrano Avenue as a "Secondary Arterial." Refer to Table 2-1, *Surrounding Land Uses*, for land use designations of adjacent uses.	As roadway facilities, Cannon Street and Serrano Avenue do not have zoning designations. However, adjacent land uses to the roadway intersection are zoned Single Family Residential (R-1-8) and Small Estate Residential (E-4) under the City of Orange Zoning Map and City of Villa Park Zoning Map, respectively; refer to Table 2-1.

EXISTING SETTING

Regional Setting: Regionally, the project site is located within the north-northeastern portion of the City of Orange. The project site is located approximately 2.18 miles south of State Route 91, approximately 4.14 miles east of State Route 55, and 3.64 miles southwest of State Route 241.

Existing Site Conditions:
(Describe the project site)

The intersection of Cannon Street and Serrano Avenue is a signal-controlled intersection with associated street lighting. There is limited pedestrian access with associated pedestrian curb ramps (one crosswalk at the east leg of Serrano Avenue and one crosswalk at the north leg of Cannon Street). Existing landscaping within project limits includes ornamental landscaping consisting of shrubs, trees, and grass within roadway rights-of-way.

Surrounding Land Uses:
(Describe the land uses and characteristics of the surrounding area)

Surrounding uses consist of single-family residential uses; refer to Table 2-1.

PROJECT DESCRIPTION

(Describe the components of the project including proposed physical improvements, construction, operations, phasing, and City approvals required to accommodate the project).

The project proposes to add a second dedicated right turn lane on northbound Cannon Street to eastbound Serrano Avenue, and to widen the existing right turn lane on westbound Serrano Avenue to northbound Cannon Street approximately four feet. The second dedicated right turn lane on Cannon Street would increase the storage capacity of the intersection. The widened right turn lane on Serrano Avenue would accommodate right turn movements that may otherwise be blocked by queued left turn movements (from westbound Serrano Avenue to southbound Cannon Street). Construction is anticipated to occur over a six-month period (in one phase). The project would be subject to Environmental Review No. 1867-19. Refer to Section 2.0, *Project Description*, for a full project description.

Other Public Agencies Whose Approval is Required (Responsible or Trustee Agencies): (Identify other public agencies whose approval is required for project implementation and agencies with jurisdiction over affected natural resources)
Potential responsible agencies include the Orange County Transportation Authority, Orange County Health Care Agency, Regional Water Quality Control Board, and/or City of Orange Fire Department; refer to Section 2.7, *Permits and Approvals*.
Scheduled Public Meetings or Hearings: (Describe the date, time and location for all scheduled public meetings and hearings)
To be determined, separate noticing will be distributed for public hearings.

1.0 INTRODUCTION

The proposed Cannon Street and Serrano Avenue Intersection Improvements (herein referenced as the "project") involves roadway improvements along the intersection of Cannon Street and Serrano Avenue within the City of Orange (City). Following a preliminary review of the proposed project, the City has determined that it is subject to the guidelines and regulations of the California Environmental Quality Act (CEQA). This Initial Study addresses the direct, indirect, and cumulative environmental effects of the project, as proposed.

1.1 STATUTORY AUTHORITY AND REQUIREMENTS

In accordance with Sections 15051 and 15367 of the California Code of Regulations (CCR), the City is identified as the Lead Agency for the proposed project. Under CEQA (Public Resources Code Section 21000-21177) and pursuant to Section 15063 of the CCR, the City is required to undertake the preparation of an Initial Study to determine if the proposed project would have a significant environmental impact. If, as a result of the Initial Study, the Lead Agency finds that there is evidence that any aspect of the project may cause a significant environmental effect, the Lead Agency shall further find that an Environmental Impact Report (EIR) is warranted to analyze project-related and cumulative environmental impacts. Alternatively, if the Lead Agency finds that there is no evidence that the project, either as proposed or as modified to include the mitigation measures identified in the Initial Study, may cause a significant effect on the environment, the Lead Agency shall find that the proposed project would not have a significant effect on the environment and shall prepare a Negative Declaration (or Mitigated Negative Declaration). Such determination can be made only if "there is no substantial evidence in light of the whole record before the Lead Agency" that such impacts may occur (Public Resources Code Section 21080[c]).

The environmental documentation, which is ultimately selected by the City in accordance with CEQA, is intended as an informational document undertaken to provide an environmental basis for subsequent discretionary actions upon the project. The resulting documentation is not, however, a policy document and its approval and/or certification neither presupposes nor mandates any actions on the part of those agencies from whom permits, and other discretionary approvals would be required.

The environmental documentation and supporting analysis is subject to a public review period. During this review, public agency comments on the document relative to environmental issues must be addressed to the City. Following review of any comments received, the City will consider these comments as a part of the project's environmental review and include them with the Initial Study documentation for consideration by the City.

1.2 PURPOSE

Section 15063 of the CEQA Guidelines identifies specific disclosure requirements for inclusion in an Initial Study. Pursuant to those requirements, an Initial Study shall include:

- A description of the project, including the location of the project;
- Identification of the environmental setting;

- Identification of environmental effects by use of a checklist, matrix, or other method, provided that entries on a checklist or other form are briefly explained to indicate that there is some evidence to support the entries;
- Discussion of ways to mitigate significant effects identified, if any;
- Examination of whether the project is compatible with existing zoning, plans, and other applicable land use controls; and
- The name(s) of the person(s) who prepared or participated in the preparation of the Initial Study.

1.3 CONSULTATION

As soon as the Lead Agency (in this case, the City of Orange) has determined that an Initial Study would be required for the project, the Lead Agency is directed to consult informally with all Responsible Agencies and Trustee Agencies that are responsible for resources affected by the project, in order to obtain the recommendations of those agencies as to whether an EIR or Negative Declaration should be prepared for the project. Following receipt of any written comments from those agencies, the Lead Agency considers any recommendations of those agencies in the formulation of the preliminary findings. Following completion of this Initial Study, the Lead Agency initiates formal consultation with these, and other governmental agencies as required under CEQA and its implementing guidelines.

1.4 INCORPORATION BY REFERENCE

The following documents were utilized during preparation of this Initial Study and are incorporated into this document by reference. These documents are available for review at the City of Orange's website: https://www.cityoforange.org/287/Planning-Division.

- *City of Orange General Plan (March 2010, with 2015 amendments)*. The purpose of the *City of Orange General Plan* (General Plan) is to anticipate and plan for the physical development of the City, and any land outside its boundaries which bears relation to its planning. The General Plan is organized into 11 elements: Land Use; Circulation and Mobility; Growth Management; Natural Resources; Public Safety; Noise; Cultural Resources and Historic Preservation; Infrastructure; Urban Design; Economic Development; and Housing. Each General Plan element presents an overview of its scope, summary of conditions and planning issues, goals, and policies.

- *City of Orange General Plan Program Environmental Impact Report (March 2010).* The City of Orange General Plan Program Environmental Impact Report (General Plan PEIR), dated March 2010, considered the environmental impacts for the General Plan. This document was prepared as a Program EIR, which is intended to facilitate consideration of broad policy directions, program-level alternatives, and mitigation measures consistent with the level of detail available for the General Plan. The General Plan PEIR concluded significant and unavoidable impacts regarding air quality, transportation/traffic, and climate change.

- *City of Orange Local CEQA Guidelines (April 11, 2006).* The City of Orange Local CEQA Guidelines (City CEQA Thresholds Guide) was prepared for the review of projects, and preparations of environmental documents pursuant to CEQA. CEQA requires the analysis

of discretionary projects to disclose their potential environmental effects. The City CEQA Thresholds Guide is a tool that compiles information that is useful in the preparation of environmental documents, and improves the level of consistency, predictability, and objectivity of the City's environmental documents. This document provides assistance in identifying historical resources and employs a combination of State CEQA Guidelines and local rules and regulations when determining impacts to historical resources.

- *City of Orange Municipal Code (codified through Ordinance No. 06-20, adopted February 11, 2020).* The *City of Orange Municipal Code* (Municipal Code) consists of regulatory, penal, and administrative ordinances of the City of Orange. It is the method the City uses to implement control of land uses, in accordance with General Plan goals and policies.

- *City of Orange Street Tree Master Plan (October 26, 1999)*. The *City of Orange Street Tree Master Plan* (Tree Master Plan) is a uniform master street tree plan used in all future street tree planting project, and removals and replacements of street trees in the public rights-of-way in, accordance with the Municipal Code and General Plan. The Tree Master Plan details species pallets, special tree conditions, planting detail, street tree specifications, and Municipal Code provisions, among others.

- *City of Orange Standard Plans and Specifications (adopted April 2015 and amended October 2016).* The purpose of the *City of Orange Standard Plans and Specifications* (Standard Plans and Specifications) is to ensure conformity of design and construction among all public works projects implemented within the City. The Standard Plans and Specifications are applicable to all improvements within the public rights-of way and easements.

As the project site is situated near the City of Villa Park/City of Orange municipal boundary (along Cannon Street), the following documents associated with the City of Villa Park are also incorporated by reference. These documents are available for review at the City of Villa Park's website: http://villapark.org/Departments/Planning?folderId=185&view=gridview&pageSize=10.

- *City of Villa Park General Plan (December 2010)*. The *City of Villa Park General Plan* (Villa Park General Plan) establishes a community vision supported by goals, policies, and programs to guide the City of Villa Park for the next 10 to 20 years. The Villa Park General Plan is intended to protect, promote, and enhance the public health, safety, and general welfare for people living and working within Villa Park. The Villa Park General Plan is composed of the following elements, which address a broad and evolving range of issues: Land Use, Circulation, Housing, Open Space/Conservation, Seismic and Safety, Noise, and Growth Management.

- *City of Villa Park Municipal Code (codified through Ordinance No. 2019-617, enacted November 26, 2019)*. The *City of Villa Park Municipal Code* (Villa Park Municipal Code) consists of regulatory, penal, and administrative ordinances of the City of Villa Park. It is the method utilized by the City of Villa Park to implement control of land uses in accordance with the Villa Park General Plan goals and policies.

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2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

Regionally, the project site is located within the north-northeastern portion of the City of Orange (City), in the County of Orange. The project site is located approximately 2.18 miles south of State Route 91 (SR-91), approximately 4.14 miles east of State Route 55 (SR-55), and 3.64 miles southwest of State Route 241 (SR-241). Cannon Street becomes Imperial Highway/State Route 90 (SR-90) approximately 1.07 mile north of the project site; refer to Exhibit 2-1, *Regional Map*. Locally, the project site is located at the intersection of Cannon Street and Serrano Avenue; refer to Exhibit 2-2, *Site Vicinity*.

2.2 ENVIRONMENTAL SETTING

The project site is situated within a residential area of the City at the intersection of Cannon Street and Serrano Avenue. Cannon Street is a north-south four-lane roadway (two lanes in each direction). The roadway is separated by a striped median. Cannon Street has an 84-foot curb to curb width. Based on the City's General Plan Circulation Element, Cannon Street is classified as a Major Arterial (six lane divided roadway that can accommodate up to 50,700 average daily trips [ADT]). Based on the Orange County Transportation Authority's (OCTA's) *Master Plan of Arterial Highways* (MPAH), published July 22, 2019, Cannon Street is classified as a Major Arterial Highway (6 lane divided roadway that accommodates 30,000 to 45,000 ADT). Curb, gutter, sidewalk, and an equestrian trail are present on the east side of Cannon Street; the west side of Cannon Street includes curb and gutter only.

Serrano Avenue is an east-west four-lane roadway (two lanes in each direction) that provides access to SR-91 through Weir Canyon Road approximately six miles east of the project site. Serrano Avenue is separated by a striped median, toward the intersection, and raised planter median further east. Serrano Avenue has a 58-foot curb to curb width. Based on the City's General Plan Circulation Element, Serrano Avenue is classified as a Primary Arterial (four lane divided roadway that can accommodate up to 33,750 ADT). Based on the Orange County Transportation Authority's (OCTA's) *Master Plan of Arterial Highways* (MPAH), published July 22, 2019, Serrano Avenue is classified as a Secondary Arterial Highway (4 lane undivided roadway that accommodates 10,000 to 20,000 ADT). Serrano Avenue includes curb, gutter, and sidewalk on the south side; whereas, the north side only includes curb and gutter.

The intersection of Cannon Street and Serrano Avenue is a signal-controlled intersection with associated street lighting. There is limited pedestrian access with associated pedestrian curb ramps (one crosswalk at the east leg of Serrano Avenue and one crosswalk at the north leg of Cannon Street). Existing landscaping within project limits includes ornamental landscaping consisting of shrubs, trees, and grass along roadway rights-of-way.

Surrounding uses primarily consist of residential uses. Table 2-1, *Surrounding Land Uses*, further describes the adjacent development.

2.3 EXISTING GENERAL PLAN AND ZONING

The *City of Orange General Plan* (General Plan) Circulation Element identifies Cannon Street as a "Major Arterial," and Serrano Avenue as a "Primary Arterial." The *City of Villa Park General Plan* (Villa Park General Plan) Circulation Element identifies Cannon Street as a "Major Arterial" within the project vicinity, and Serrano Avenue as a "Secondary Arterial." As shown in Table 2-1, the General Plan land use designations in the project area include "Low Density Residential" and "Small Estate Residential." The Villa Park General Plan land use designation adjacent to the project area is "Estate Low Density Residential."

Table 2-1
Surrounding Land Uses

Direction	Jurisdiction	General Plan Designation	Zoning	Existing Uses
North	City of Orange	Low Density Residential	R-1-8	Single family residential uses with a density of 2.1-60 dwelling units per acre
East	City of Orange	Low Density Residential; Estate Low Density Residential	R-1-8	Single family residential uses with a density of 2.1-60 dwelling units per acre;
West	City of Villa Park	Small Estate Residential	E-4	Single family residential uses with a density of 1.75 dwelling units per acre
South	City of Orange	Estate Low Density Residential	R-1-8	Large lot, single-family residential uses with noncommercial equestrian and agricultural uses allowed if associated with residences.

Notes: R-1-8 = Single Family Residential, 8,000 square feet; E-4 = Small Estate Residential

2.4 PROJECT BACKGROUND

The project proposes to utilize funding provided by the City's General Fund and is included as Project No. 20383 in the 2018-2019 City of Orange Budget and Capital Improvement Program (CIP). The purpose of this project is to address bottlenecking occurring at the right turn lane from Cannon Street onto Serrano Avenue and insufficient right turn lane queuing capacity at the right turn lane from Serrano Avenue onto Cannon Street. According to the traffic analysis conducted for the proposed project, traffic at the intersection currently operates at a deficient Level of Service (LOS) of E, refer to Section 4.17, *Transportation*. In 1998, the City formally included the proposed project in the CIP to address traffic congestion concerns at these locations.

2.5 PROJECT CHARACTERISTICS

The project proposes to add a second dedicated right turn lane on northbound Cannon Street to eastbound Serrano Avenue, and to widen the existing right turn lane on westbound Serrano Avenue to northbound Cannon Street approximately four feet. The second dedicated right turn lane on Cannon Street would increase the storage capacity of the intersection. The widened right turn lane on Serrano Avenue would accommodate right turn movements that may otherwise be blocked by queued left turn movements (from westbound Serrano Avenue to southbound Cannon Street). All proposed improvements are situated within existing roadway right-of-way and no property acquisition is proposed.

NOT TO SCALE

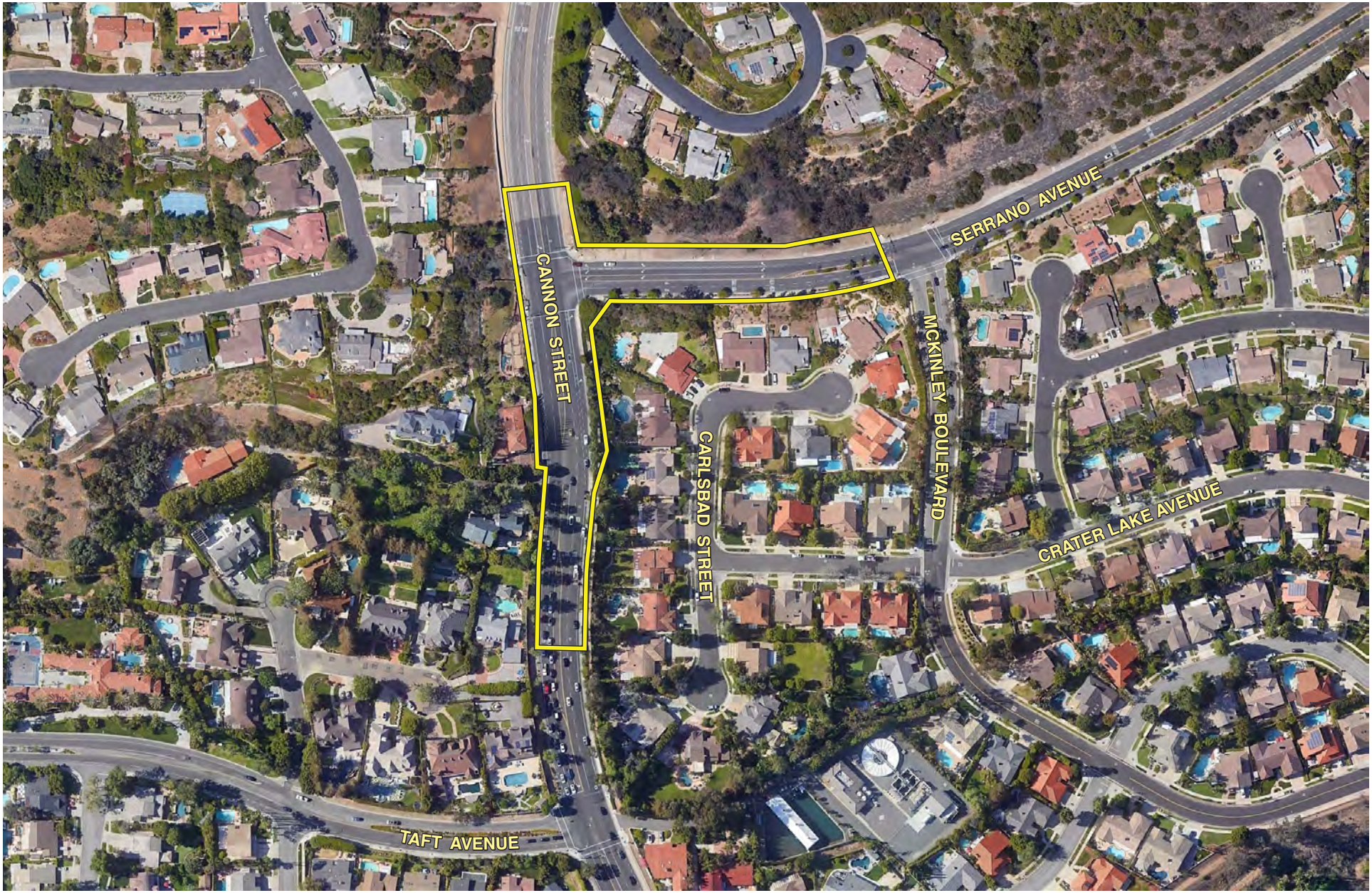
Michael Baker INTERNATIONAL

10/2019 JN 174203

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION
CANNON STREET & SERRANO AVENUE INTERCHANGE IMPROVEMENTS

Regional Vicinity

Exhibit 2-1



Source: Google Earth Pro, June 2020

NOT TO SCALE

Michael Baker INTERNATIONAL

Project Site

06/2020 JN 174203

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION
CANNON STREET & SERRANO AVENUE INTERCHANGE IMPROVEMENTS

Site Vicinity

Exhibit 2-2

ROADWAY IMPROVEMENTS

The following roadway improvements are proposed; refer to Exhibit 2-3, *Conceptual Site Plan*.

- Widen the east side of Cannon Street, on the south leg of the intersection at Serrano Avenue, to accommodate a 10.75-foot right turn lane and a ten-foot paved multi-use sidewalk (intended for both pedestrians and equestrians); refer to Exhibit 2-4, *Cannon Street – Conceptual Section*;
- Relocate the existing Americans with Disabilities Act (ADA) pedestrian curb ramp (on the southeast corner of the Cannon Street and Serrano Avenue intersection, street light, traffic signal, pedestrian push button, and equestrian crossing push button further east to accommodate the additional right-turn lane;
- Relocate the curb, gutter, and utilities located along the east side of Cannon Street 10.75 feet east to accommodate the new right turn lane and relocate utility boxes and a street light along Serrano Avenue and Cannon Street within the project site; and
- Widen approximately four feet to the north, a portion of Serrano Avenue, from the intersection to approximately 300 feet east, to provide a 12-foot wide right-turn lane; refer to Exhibit 2-5, *Serrano Avenue – Conceptual Section*.

UTILITIES

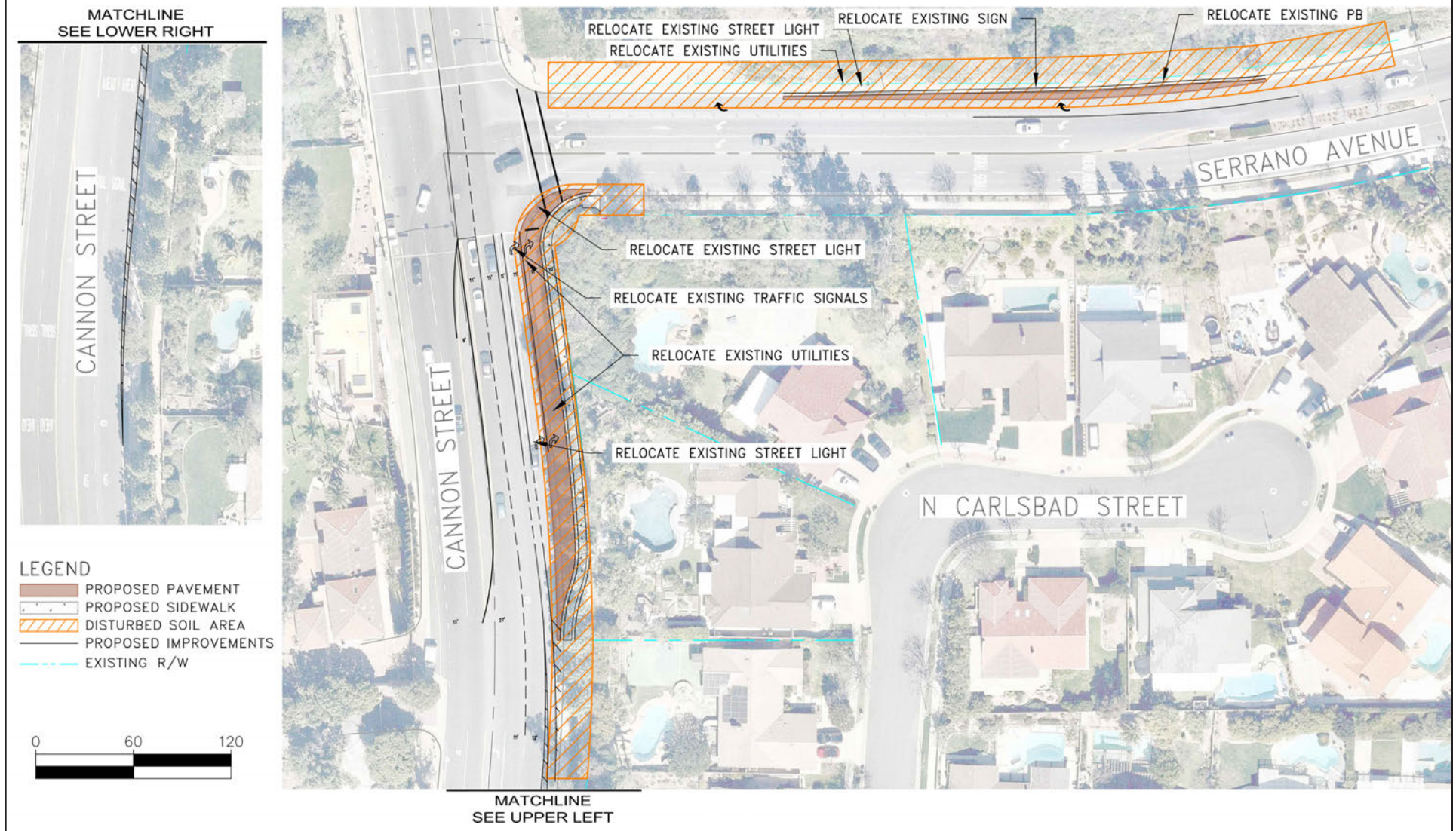
Existing utilities would require relocation as part of the proposed improvements, including dry utilities (e.g., natural gas and fiberoptic cable). Further, the existing traffic signal pole and street light at the southeast corner of the Cannon Street and Serrano Avenue intersection would be relocated to accommodate the additional right turn lane proposed. Other utility relocations would include one light pole on the north side of Serrano Avenue, to be relocated further north to accommodate the widened Serrano Avenue improvements.

LANDSCAPING

The project would remove existing ornamental landscaping along the east side of Cannon Street in order to accommodate the proposed right turn lane from Cannon Street onto Serrano Avenue and the new multi-use sidewalk. Existing ornamental landscaping to be removed include approximately eight mature trees (Canary Island pine) and existing shrubs to the east of Cannon Street within roadway right-of-way. Due to limited area for improvements, no replacement landscaping is proposed. However, the project would install three-foot high fencing with wooden posts and railing between the proposed curb and multi-use sidewalk to separate pedestrians/motorists from vehicles. Further, the proposed project would retain-in-place the existing mature ornamental tree (Brazilian pepper) located at the southeast corner of the Cannon Street and Serrano Avenue intersection.

2.6 CONSTRUCTION/PHASING

The proposed intersection improvements would occur in a single phase. Construction is anticipated to begin as early as summer 2022 and would last approximately six months. Proposed improvements include relocating the existing curb line to accommodate the additional right turn lane, utility relocations, striping, and construction signal modification (disturbance of less than 19-foot below ground surface). Minor grading is necessary to accommodate the right turn lane. The total area of disturbance during construction is anticipated to be approximately 0.3-acre.



Source: City of Orange, May 2020

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION
CANNON STREET & SERRANO AVENUE INTERCHANGE IMPROVEMENTS

Conceptual Site Plan

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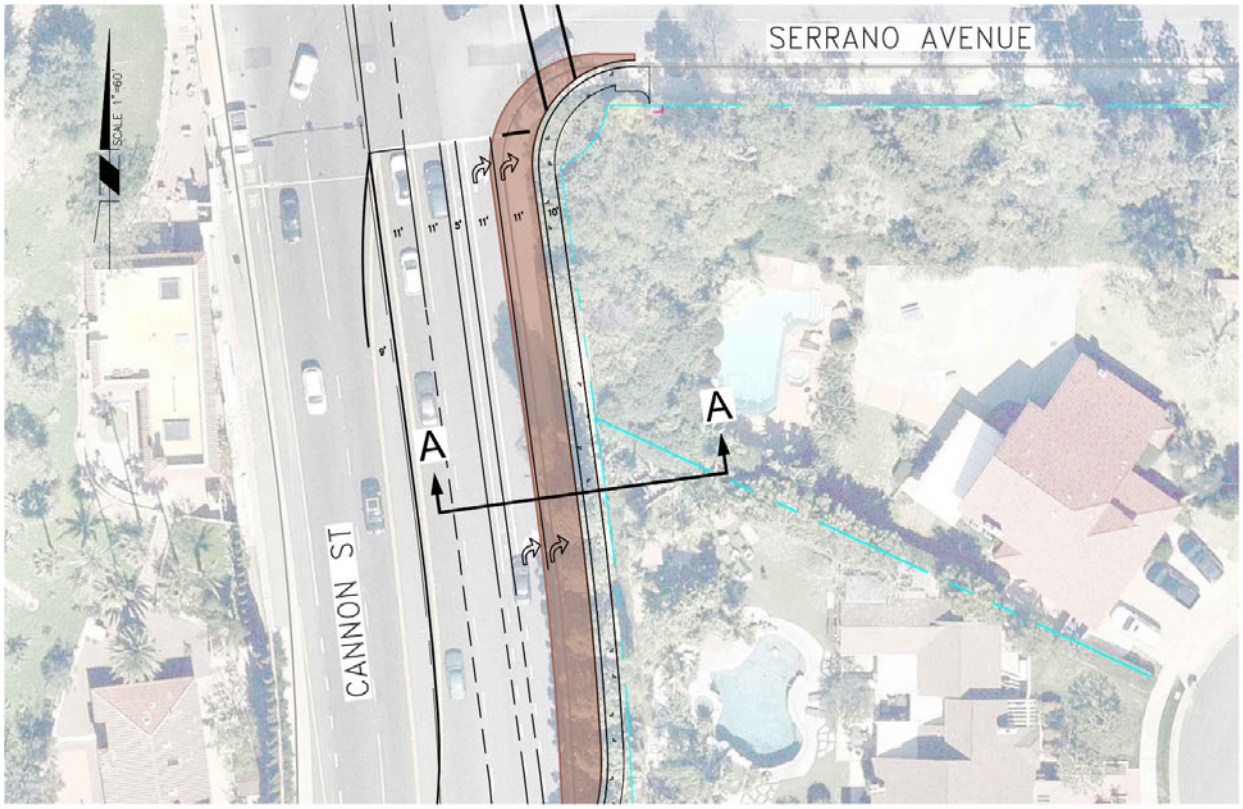
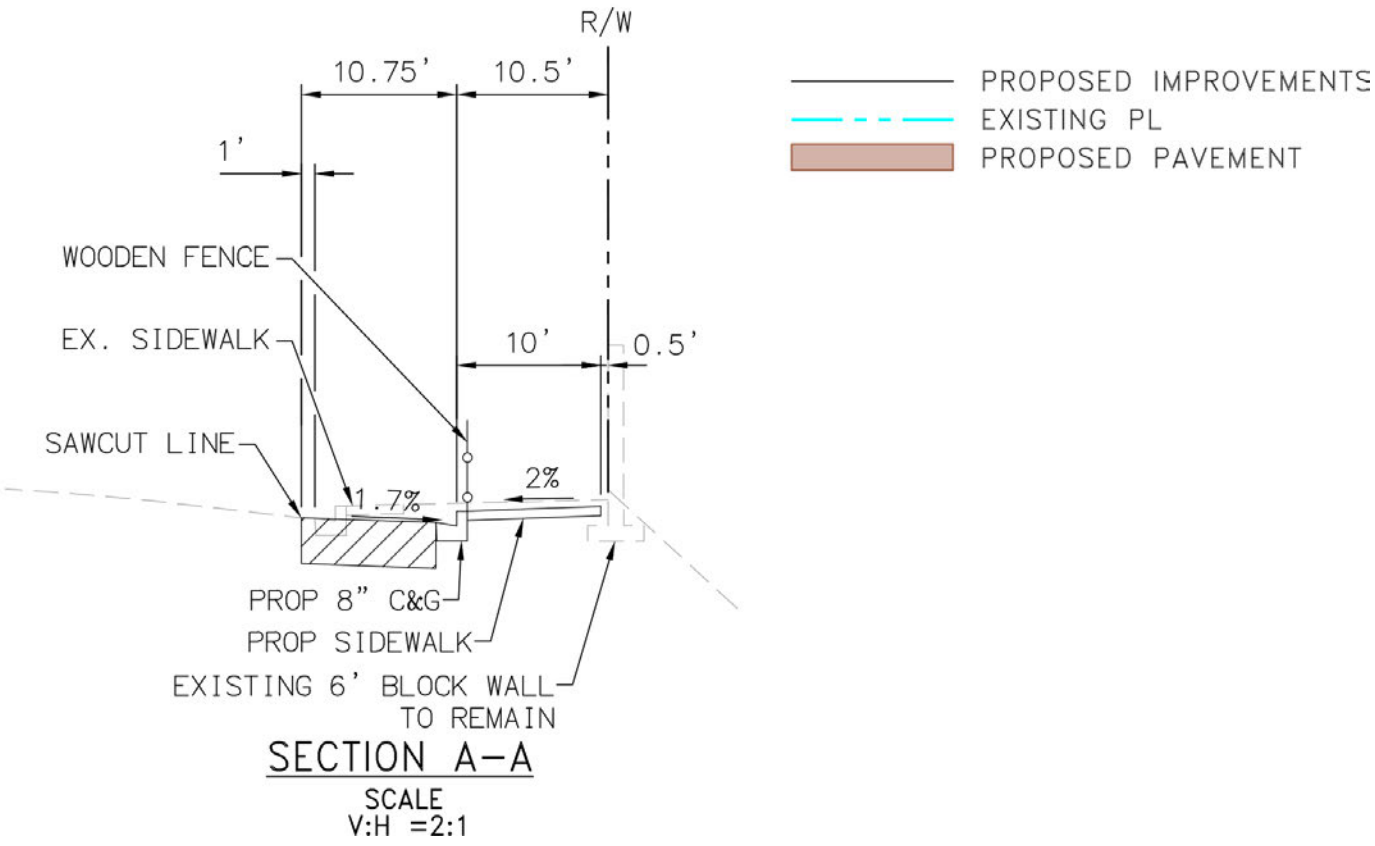
06/2020 JN 174203

Exhibit 2-3





Source: City of Orange, May 2020

NOT TO SCALE

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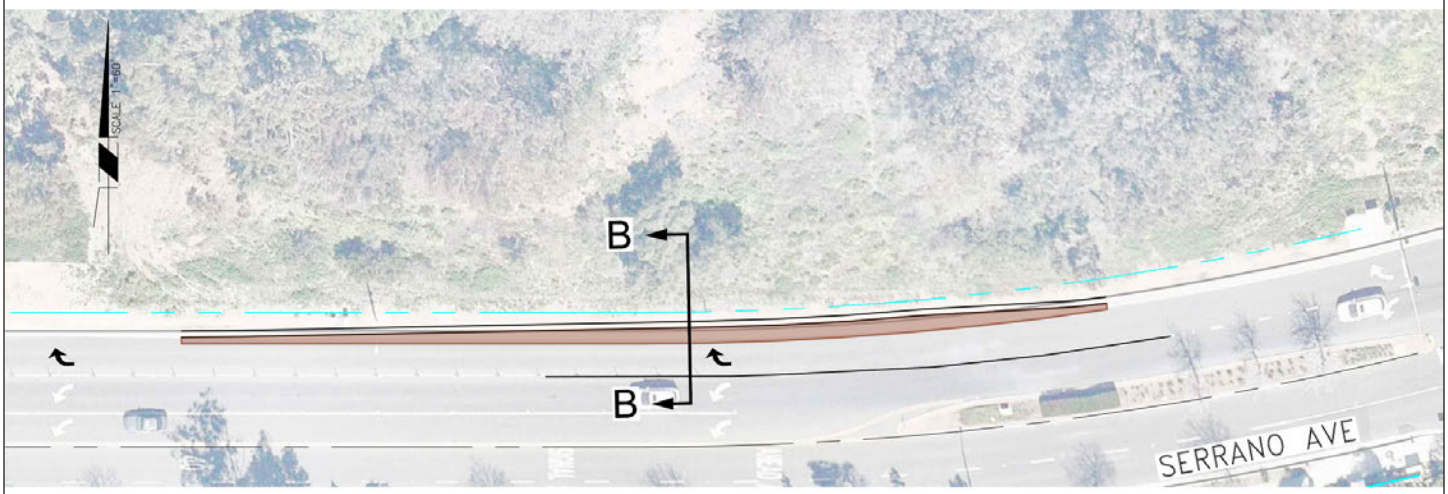
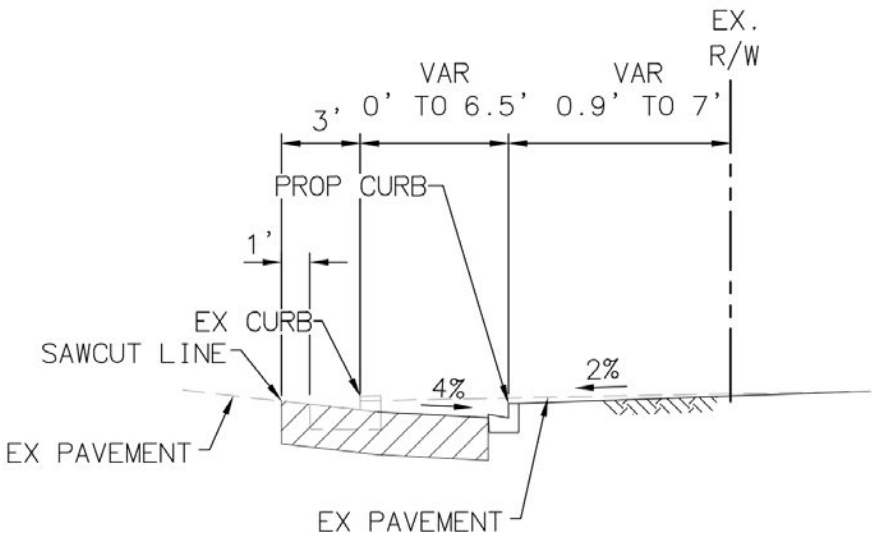
06/2020 JN 174203

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION
CANNON STREET & SERRANO AVENUE INTERCHANGE IMPROVEMENTS

Cannon Street – Conceptual Section

Exhibit 2-4





SECTION B–B
N.T.S.

PROPOSED IMPROVEMENTS
EXISTING R/W
PROPOSED PAVEMENT

Source: City of Orange, May 2020

NOT TO SCALE

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06/2020 JN 174203

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION
CANNON STREET & SERRANO AVENUE INTERCHANGE IMPROVEMENTS

Serrano Avenue – Conceptual Section

Exhibit 2-5

2.7 PERMITS AND APPROVALS

The City of Orange is the lead agency under the California Environmental Quality Act (CEQA), and is responsible for planning, partially funding, and implementing the proposed project. This environmental document is intended to meet the requirements of CEQA for all discretionary actions taken by the City related to the proposed project including, but not limited to, approval of preliminary project plans, approval of agreements related to utility relocations, approval of finals plans and specifications, authorization to bid the project for construction, and authorization to award the construction contract.

The Orange County Transportation Authority (OCTA) is potentially a "Responsible Agency" under CEQA. The proposed project is funded through the Intersection Capacity Enhancement (ICE) program. Prior to construction, the City will coordinate with OCTA regarding the temporary closure and/or relocation of impacted bus stops.

If over the course of project construction, on-site contamination is encountered, the Orange County Health Care Agency, Regional Water Quality Control Board (RWQCB), and/or City of Orange Fire Department may have regulatory authority and oversight over remediation efforts.

The potential Responsible Agencies identified above (and any others identified over the course of the project) may use this environmental document for CEQA compliance purposes when a discretionary decision is made in relation to the project.

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3.0 INITIAL STUDY CHECKLIST

3.1 BACKGROUND

1.	**Project Title:** Cannon Street and Serrano Avenue Intersection Improvements
2.	**Lead Agency Name and Address:** City of Orange 300 East Chapman Avenue Orange, California 92866
3.	**Contact Person and Phone Number:** Mr. Kevin Yamakawa, Associate Civil Engineer 714.744.5553
4.	**Project Location:** The project is located at the intersection of Cannon Street and Serrano Avenue.
5.	**Project Sponsor's Name and Address:** City of Orange Public Works Department 300 East Chapman Avenue Orange, California 92866
6.	**General Plan Designation:** The *City of Orange General Plan* Circulation Element identifies Cannon Street as a "Major Arterial," and Serrano Avenue as a "Primary Arterial." The *City of Villa Park General Plan* Circulation Element identifies Cannon Street as a "Major Arterial" within the project vicinity, and Serrano Avenue as a "Secondary Arterial." Refer to Table 2-1, *Surrounding Land Uses*, for land use designations of adjacent uses.
7.	**Zoning:** As roadway facilities, Cannon Street and Serrano Avenue do not have zoning designations. However, adjacent uses to the roadway intersection are zoned Single Family Residential (R-1-8) and Small Estate Residential (E-4) under the City of Orange Zoning Map and City of Villa Park Zoning Map, respectively; refer to Table 2-1.
8.	**Description of the Project:** The project proposes to add a second dedicated right turn lane on northbound Cannon Street to eastbound Serrano Avenue, and to widen the existing right turn lane on westbound Serrano Avenue to northbound Cannon Street approximately four feet. The second dedicated right turn lane on Cannon Street would increase the storage capacity of the intersection. The widened right turn lane on Serrano Avenue would accommodate right turn movements that may otherwise be blocked by queued left turn movements (from westbound Serrano Avenue to southbound Cannon Street). Construction is anticipated to occur over a six-month period (in one phase). The project would be subject to Environmental Review No. 1867-19. Refer to Section 2.5, *Project Characteristics* for a full project description.
9.	**Surrounding Land Uses and Setting:** The project site is surrounded by residential uses; refer to Table 2-1.
10.	**Other public agencies whose approval is required (e.g., permits, financing approval or participation agreement):** Potential responsible agencies include the Orange County Transportation Authority, Orange County Health Care Agency, Regional Water Quality Control Board, and/or City of Orange Fire Department; refer to Section 2.7, *Permits and Approvals*.

3.2 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" or "Less Than Significant With Mitigation Incorporated," as indicated by the checklist on the following pages.

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

3.3 LEAD AGENCY DETERMINATION

On the basis of this initial evaluation:

I find that the proposed use COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

I find that although the proposal could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described in Section 4.0 have been added. A MITIGATED NEGATIVE DECLARATION will be prepared. ✓

I find that the proposal MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

I find that the proposal MAY have a significant effect(s) 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, if the effect is a "potentially significant impact" or "potentially significant unless mitigated." An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

Signature	City of Orange Agency
Kevin Yamakawa Printed Name	November 10, 2020 Date

4.0 ENVIRONMENTAL ANALYSIS

The following is a discussion of potential project impacts as identified in the Initial Study.

4.1 AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?				✓
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				✓
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 publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning or other regulations governing scenic quality?			✓	
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			✓	

Impact Analysis:

a) Have a substantial adverse effect on a scenic vista?

According to the General Plan PEIR, scenic vistas are primarily located in the eastern portion of the City where topography and open space allow for far-reaching views. The project site is located within the northern portion of the City, where surrounding topography, mature trees, and existing development block far-reaching views. The project site is not located in a viewscape corridor as identified by General Plan PEIR Figure 5.1-1, *Viewscape Corridor*. Thus, the proposed project would not have a substantial adverse effect on a scenic vista and no impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

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

According to the California Department of Transportation's *List of Eligible and Officially Designated State Scenic Highways*, there are no designated or eligible State scenic highways

located near the project site or within the City's limits.[1] The closest officially designated or eligible State scenic highway is State Route 91 (SR-91), which is located approximately 2.25 miles northwest of the project site. Views of the project site are not afforded from SR-91 due to intervening topography, structures, and vegetation. Thus, project implementation would have no impact on scenic resources within a State scenic highway.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: 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 publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning or other regulations governing scenic quality?

As discussed in Section 2.2, *Environmental Setting*, the project site currently includes a signal-controlled intersection with curb, gutter, and sidewalk. Street lighting and traffic signals are present. Existing landscaping within the project limits include shrubs, trees, and grasses along the intersection. An equestrian trail and sidewalk are present on the east side of Cannon Street. The project site is surrounded by residential uses on all sides. As the project is surrounded by urbanized uses in all directions, the following discussion analyzes the project's potential to conflict with applicable zoning and other regulations governing scenic quality.

CONSTRUCTION IMPACTS

The proposed improvements would include minor resurfacing and restriping throughout the majority of the boundaries. However, some grading would be necessary to accommodate the right-turn lane. Based on the project's limited construction duration (six months), these activities are not anticipated to conflict with applicable zoning or regulations during construction. Impacts would be less than significant in this regard.

OPERATIONAL IMPACTS

As a roadway improvement project, there are no applicable zoning or other regulations governing scenic quality which apply to the project. While the General Plan Circulation and Mobility Element includes a goal related to circulation system aesthetics (Goal 6.0), its policies intended to govern scenic quality are only applicable to commercial corridors. As the project site is located in a residential neighborhood, the policies under Circulation and Mobility Element Goal 6.0 would not apply.

Tree Preservation Ordinance

The City's Tree Preservation Ordinance (Municipal Code Chapter 12.32, *Tree Preservation*) is intended to prevent further destruction of its trees and orchards, and, as such, places reasonable restrictions on such acts of removal and destruction. The primary purpose of the subject provisions is to regulate the removal and destruction of trees from undeveloped and public interest

[1] California Department of Transportation, *List of Eligible and Officially Designated State Scenic Highways*, updated March 2017.

property. The primary concern is the regulation of large scale tree removal from undeveloped property in that large parcels of undeveloped acreage are more likely to have a vast number of trees, the removal of which is more likely to have an adverse effect upon the surrounding environment. Past destruction of trees on such property has not only interfered with the natural scenic beauty and tourism of the City, but also greatly diminishes the ecological value of such natural vegetation. Further, the City may lose mature trees that have grown in stature and provide special interest in properties and contribute to the overall streetscape and historic character of the City.

Municipal Code Chapter 12.32, the Tree Preservation Ordinance restricts removal of trees, including those on private property that are deemed to be "endowed with a public interest" or may be of historical value "by virtue of their origin, size, uniqueness and/or national or regional rarity." Trees determined to be historic are compiled on a master list, which is maintained by the City's Community Services Department and approved by resolution of the City Council.

As discussed in Section 2.5, Project Characteristics, project construction would require the removal of up to eight mature street trees (Canary Island pine) along Cannon Street and Serrano Avenue. The proposed project would retain-in-place the existing mature ornamental tree (Brazilian pepper) located at the southeast corner of the Cannon Street and Serrano Avenue intersection. None of the trees proposed for removal are deemed to be "endowed with a public interest" or may be of historical value "by virtue of their origin, size, uniqueness and/or national or regional rarity" by the City of Orange. As such, no impacts would result in this regard.

Street Trees Ordinance

The proposed project would be required to document the planting or removal of any street tree or shrub as part of the plans, specifications & estimate phase. As discussed in Section 2.5, Project Characteristics, project construction would require the removal of up to eight mature street trees (Canary Island pine) along Cannon Street. The proposed project would retain-in-place the existing mature ornamental tree (Brazilian pepper) located at the southeast corner of the Cannon Street and Serrano Avenue intersection. Pursuant to Municipal Code Sections 12.28.030 and 12.32.110, the project would be required to submit a grading plan which shows the location of each tree proposed to be removed as part of the review process, and any tree removal activities would be coordinated with the Community Services Department. As such, impacts pertaining to tree removal would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

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

There are two primary sources of light: light emanating from building interiors that pass through windows and light from exterior sources (e.g., street lighting, parking lot lighting, building illumination, security lighting, and landscape lighting). Light introduction can be a nuisance to adjacent uses and diminish the view of the clear night sky. Currently, light and glare in the project

vicinity is produced by vehicle headlights, street lighting, and lighting from adjacent residential uses.

CONSTRUCTION IMPACTS

Pursuant to Municipal Code Section 8.24.050, *Exemptions from Chapter Provisions*, project construction would be required to occur between the hours of 7:00 a.m. and 8:00 p.m. on any day except for Sundays or Federal holidays, or between the hours of 9:00 a.m. and 8:00 p.m. on Sundays and Federal holidays. Thus, as no construction activities would be permitted after 8:00 p.m., no short-term construction-related light and glare impacts would result.

OPERATIONAL IMPACTS

The project would not introduce new sources of light and glare. The project would involve the relocation of the existing traffic signal pole and street light at the southeast corner of the Cannon Street and Serrano Avenue intersection to accommodate the additional right turn lane proposed. The project would also relocate one light pole on the north side of Serrano Avenue to accommodate the widened Serrano Avenue improvements. In conformance with Municipal Code Section 17.12.030, *Lighting*, all project lighting would be directed, controlled, screened, or shaded in such a manner as not to shine directly on surrounding premises. With compliance with Municipal Code Section 17.12.030, project implementation would not create a new source of substantial light and glare that would adversely affect day or nighttime views in the area. Impacts in this regard would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

4.2 AGRICULTURE AND FOREST 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 forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?				✓
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?				✓
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				✓
d. Result in the loss of forest land or conversion of forest land to non-forest use?				✓
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?				✓

Impact Analysis:

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?

The proposed project site is developed as an existing roadway intersection. No farmland exists within the site vicinity. Based on the California Department of Conservation's Farmland Mapping and Monitoring Program, the project site is characterized as Urban and Built-Up Land, and surrounding areas are characterized as Urban and Built-Up Land as well as Other Land.[1] Thus, no impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

[1] California Department of Conservation Farmland Mapping and Monitoring Program, *Orange County Important Farmland 2016*, September 2018.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

The residences east of Cannon Street are zoned Single Family Residential, 8,000 square feet (R-1-8) within the City of Orange. The adjoining properties west of Cannon Street are zoned Small Estate Residential (E-4) within the City of Villa Park. No agricultural zones exist within the project site and its vicinity. In addition, the project site is not covered under a Williamson Act contract.[2] Thus, no impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

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

Refer to Response 4.2(b). No zoning for forest land or timberland exists within the project area, and project implementation would not result in the rezoning of forest land, timberland, or timberland zoned Timberland Production. As such, no impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

Refer to Response 4.2(c).

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

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?

Refer to Responses 4.2(a) through 4.2(d).

Significance Determination: No Impact.

[2] California Department of Conservation, *Orange County Williamson Act Parcels Agricultural Preserves 2004*, October 1, 2004.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

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4.3 AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?			✓	
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?			✓	
c. Expose sensitive receptors to substantial pollutant concentrations?			✓	
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			✓	

Impact Analysis:

a) Conflict with or obstruct implementation of the applicable air quality management plan?

Air quality plans describe air pollution control strategies to be implemented by a city, county or regional air district. The primary purpose of an air quality plan is to bring an area that does not attain National ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS) into compliance pursuant to the Clean Air Act (CAA) and California Clean Air Act (CCAA). NAAQS and CAAQS have been established for the following criteria pollutants: ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_X), particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb).

The proposed project is located in the City of Orange within the South Coast Air Basin (Basin), which is governed by the South Coast Air Quality Management District (SCAQMD). On March 3, 2017, the SCAQMD Governing Board approved the *2016 Air Quality Management Plan* (2016 AQMP), which outlines its strategies for meeting the NAAQS for $PM_{2.5}$ and O_3. According to the 2016 AQMP, two main criteria must be addressed in an air quality analysis. Each of the two criteria are discussed below. The current attainment status of the Basin is noted in Table 4.3-1, *South Coast Air Basin Attainment Status*.

Criterion 1

With respect to the first criterion, SCAQMD methodologies require that an air quality analysis for a project include forecasts of project emissions in relation to contributing to air quality violations and delay of attainment.

I. Would the project result in an increase in the frequency or severity of existing air quality violations?

Since the consistency criterion pertains to pollutant concentrations, rather than to total regional emissions, an analysis of the project's pollutant emissions relative to localized pollutant concentrations is used as the basis for evaluating project consistency. As discussed in Responses 4.3(b) and 4.3(c), construction emissions and localized concentrations of CO, NO_X, PM_{10}, and $PM_{2.5}$ would be less than significant. Therefore, the project would not increase the frequency or severity of existing air quality violations. Because reactive organic gases (ROGs) are not a criteria pollutant, there is no ambient standard or localized threshold for ROGs. Due to the role ROG plays in O_3 formation, it is classified as a precursor pollutant and only a regional emissions threshold was established.

Table 4.3-1
South Coast Air Basin Attainment Status

Pollutant	Averaging Time	California Attainment Status	Federal Attainment Status
Ozone (O_3)	1 Hour	Nonattainment	Nonattainment (Extreme)
	8 Hour	Nonattainment	Nonattainment (Extreme)
Particulate Matter (PM_{10})	24 Hour	Nonattainment	Attainment/Maintenance
	Annual Arithmetic Mean	Nonattainment	Not Applicable
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	Nonattainment	Nonattainment (Serious)
	Annual Arithmetic Mean	Nonattainment	Nonattainment (Serious)
Carbon Monoxide (CO)	8 Hour	Attainment	Attainment (Maintenance)
	1 Hour	Attainment	Attainment (Maintenance)
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	Nonattainment	Attainment (Maintenance)
	1 Hour	Nonattainment	Attainment (Maintenance)
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	Unclassifiable	Attainment
	24 Hour	Attainment	Attainment
	3 Hour	Not Applicable	Attainment
	1 Hour	Attainment	Not Applicable

Source: South Coast Air Quality Management District, https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf?sfvrsn=2, accessed December 3, 2019.

II. Would the project cause or contribute to new air quality violations?

As discussed in Responses 4.3(b) and 4.3(c), the proposed project would result in emissions below the SCAQMD thresholds. Therefore, the proposed project would not have the potential to cause or contribute to new air quality violations.

III. Would the project delay timely attainment of air quality standards or the interim emissions reductions specified in the AQMP?

The proposed project would result in less than significant impacts with regard to localized concentrations during project construction and operations; refer to Response 4.3(c). As such, the proposed project would not delay the timely attainment of air quality standards or 2016 AQMP emissions reductions.

Criterion 2

With respect to the second criterion for determining consistency with SCAQMD and Southern California Association of Governments (SCAG) air quality policies, it is important to recognize that air quality planning within the Basin focuses on attainment of ambient air quality standards at the earliest feasible date. Projections for achieving air quality goals are based on assumptions regarding population, housing, and growth trends. Thus, the SCAQMD's second criterion for determining project consistency focuses on whether or not the proposed project exceeds the assumptions utilized in preparing the forecasts presented in the 2016 AQMP. Determining whether or not a project exceeds the assumptions reflected in the 2016 AQMP involves the evaluation of the three factors outlined below. The following discussion provides an analysis of each of these criteria.

I. *Would the project be consistent with the population, housing, and employment growth projections utilized in the preparation of the AQMP?*

A project is consistent with the AQMP in part if it is consistent with the population, housing, and employment assumptions that were used in the development of the 2016 AQMP. In the case of the 2016 AQMP, three sources of data form the basis for the projections of air pollutant emissions: the *City of Orange General Plan* (General Plan), SCAG's *Growth Management* Chapter of the *Regional Comprehensive Plan and Guide* (RCPG), and SCAG's *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (2016 RTP/SCS). The 2016 RTP/SCS also provides socioeconomic forecast projections of regional population growth. While the proposed roadway improvements would improve traffic efficiency and safety in the project area, they would not increase the roadway capacity of the intersection or represent a trip generating land use. Rather, the project would address existing deficiencies and implement improvements at the Cannon Street and Serrano Avenue intersection consistent with the goals within the General Plan Circulation Element; refer to Section 2.0, *Project Description*. Therefore, the proposed project would be consistent with the General Plan. Furthermore, as a roadway improvement project, the project does not introduce any new land uses that could increase population beyond what is considered in the General Plan and, therefore, would not affect City-wide plans related to population growth. Thus, the proposed project is consistent with the types, intensity, and patterns of land use envisioned for the site in the RCPG. The population, housing, and employment forecasts, which are adopted by SCAG's Regional Council, are based on the local plans and policies applicable to the City; these are used by SCAG in all phases of implementation and review. As the SCAQMD has incorporated these same projections into the 2016 AQMP, it can be concluded that the proposed project would be consistent with the projections.

II. *Would the project implement all feasible air quality mitigation measures?*

The proposed project would result in less than significant air quality impacts and would not require implementation of any mitigation measures. Furthermore, compliance with all feasible emission reduction standards identified by the SCAQMD would be required as identified in Responses 4.3(b) and 4.3(c). As such, the proposed project meets this 2016 AQMP consistency criterion.

III. *Would the project be consistent with the land use planning strategies set forth in the AQMP?*

The proposed project would serve to implement the City's transportation and circulation goals in the General Plan Circulation Element and SCAG policies to reduce congestion. The

proposed project is located within a developed portion of the City and would relieve existing traffic congestion in the area and allow for more efficient and safe mobility, which would lower idling air emissions.

In conclusion, project development would not have a significant long-term impact on the region's ability to meet State and Federal air quality standards. Additionally, the proposed project would be consistent with the goals and policies of the 2016 AQMP regarding fugitive dust control. As discussed above, the proposed project's would also be consistent with the goals and policies of the General Plan Circulation Element and the 2016 AQMP. Overall, development of the project would not conflict with or obstruct implementation of the 2016 AQMP and impacts would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

CRITERIA POLLUTANTS

Carbon Monoxide. CO is an odorless, colorless toxic gas that is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions.

CO replaces oxygen in the body's red blood cells. Individuals with a deficient blood supply to the heart, patients with diseases involving heart and blood vessels, fetuses (unborn babies), and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes are most susceptible to the adverse effects of CO exposure. People with heart disease are also more susceptible to developing chest pains when exposed to low levels of carbon monoxide.

Ozone. O_3 occurs in two layers of the atmosphere. The layer surrounding the Earth's surface is the troposphere. The troposphere extends approximately 10 miles above ground level, where it meets the second layer, the stratosphere. The stratospheric (the "good" O_3 layer) extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays. "Bad" O_3 is a photochemical pollutant, and needs volatile organic compounds (VOCs), NO_X, and sunlight to form; therefore, VOCs and NO_X are O_3 precursors. To reduce O_3 concentrations, it is necessary to control the emissions of these O_3 precursors. Significant O_3 formation generally requires an adequate amount of precursors in the atmosphere and a period of several hours in a stable atmosphere with strong sunlight. High O_3 concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

While O_3 in the upper atmosphere (stratosphere) protects the earth from harmful ultraviolet radiation, high concentrations of ground-level O_3 (in the troposphere) can adversely affect the human respiratory system and other tissues. O_3 is a strong irritant that can constrict the airways, forcing the respiratory system to work hard to deliver oxygen. Individuals exercising outdoors, children, and people with pre-existing lung disease such as asthma and chronic pulmonary lung disease are considered to be the most susceptible to the health effects of O_3. Short-term

exposure (lasting for a few hours) to O_3 at elevated levels can result in aggravated respiratory diseases such as emphysema, bronchitis and asthma, shortness of breath, increased susceptibility to infections, inflammation of the lung tissue, increased fatigue, as well as chest pain, dry throat, headache, and nausea.

Nitrogen Dioxide. NO_X are a family of highly reactive gases that are a primary precursor to the formation of ground-level O_3 and react in the atmosphere to form acid rain. NO_2 (often used interchangeably with NO_X) is a reddish-brown gas that can cause breathing difficulties at elevated levels. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries, and other industrial operations). NO_2 can irritate and damage the lungs and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However, continued or frequent exposure to NO_2 concentrations that are typically much higher than those normally found in the ambient air may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may aggravate eyes and mucus membranes and cause pulmonary dysfunction.

Coarse Particulate Matter. PM_{10} refers to suspended particulate matter, which is smaller than 10 microns or ten one-millionths of a meter. PM_{10} arises from sources such as road dust, diesel soot, combustion products, construction operations, and dust storms. PM_{10} scatters light and significantly reduces visibility. In addition, these particulates penetrate into lungs and can potentially damage the respiratory tract. On June 19, 2003, the California Air Resources Board (CARB) adopted amendments to the Statewide 24-hour particulate matter standards based upon requirements set forth in the Children's Environmental Health Protection Act (Senate Bill 25).

Fine Particulate Matter. Due to recent increased concerns over health impacts related to fine particulate matter (particulate matter 2.5 microns in diameter or less), both State and Federal $PM_{2.5}$ standards have been created. Particulate matter impacts primarily affect infants, children, the elderly, and those with pre-existing cardiopulmonary disease. In 1997, the U.S. Environmental Protection Agency (EPA) announced new $PM_{2.5}$ standards. Industry groups challenged the new standard in court and the implementation of the standard was blocked. However, upon appeal by the EPA, the United States Supreme Court reversed this decision and upheld the EPA's new standards. On January 5, 2005, the EPA published a Final Rule in the Federal Register that designates the Basin as a nonattainment area for Federal $PM_{2.5}$ standards. On June 20, 2002, CARB adopted amendments for Statewide annual ambient particulate matter air quality standards. These standards were revised/established due to increasing concerns by CARB that previous standards were inadequate, as almost everyone in California is exposed to levels at or above the current State standards during some parts of the year, and the Statewide potential for significant health impacts associated with particulate matter exposure was determined to be large and wide-ranging.

Sulfur Dioxide. SO_2 is a colorless, irritating gas with a rotten egg smell; it is formed primarily by the combustion of sulfur-containing fossil fuels. Sulfur dioxide is often used interchangeably with sulfur oxides (SO_X). Exposure of a few minutes to low levels of SO_2 can result in airway constriction in some asthmatics.

Volatile Organic Compounds. VOCs are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form O_3 to the same extent when

exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant. The SCAQMD uses the terms VOC and ROG (see below) interchangeably.

Reactive Organic Gases. Similar to VOCs, ROGs are also precursors in forming O_3 and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROGs and nitrogen oxides react in the presence of sunlight. ROGs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant. The SCAQMD uses the terms ROG and VOC interchangeably.

CONSTRUCTION IMPACTS

Short-term air quality impacts are anticipated during construction activities associated with implementation of the proposed project. Temporary air emissions would result from the following activities:

- Earth-moving activities (producing particulate [fugitive dust] dust emissions); and
- Grading/construction equipment and the motor vehicles of construction crews (producing exhaust emissions).

Construction activities are anticipated to occur for a six-month period and would consist of demolition, grading, and paving. Proposed grading activities during construction would consist of up to approximately 2,900 cubic yards of soil to be exported off-site. No stockpiling of materials would be required off-site. Grading activities would be short-term and would cease following the completion of the construction activities. Mobile source emissions would result from the use of construction equipment such as excavators, graders, other construction equipment, trenchers, tractors/loaders/backhoes. The assessment of construction air quality impacts considers each of these potential sources.

Construction emissions were estimated using the California Emissions Estimator Model version 2016.3.1 (CalEEMod) based on the construction information compiled for the project; refer to Appendix 8.1, *Air Quality/Greenhouse Gas/Energy Data*. Results of the construction emission modeling are shown in Table 4.3-2, *Construction Air Emissions*. Emitted pollutants would include ROG, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. The largest amount of CO and NO_X emissions would occur during the grading phase. PM_{10} and $PM_{2.5}$ emissions would occur from fugitive dust (due to earthwork and excavation) and from construction equipment exhaust. The majority of PM_{10} and $PM_{2.5}$ emissions would be generated by fugitive dust from grading activities. Exhaust emissions from grading and construction activities include emissions associated with grading activities as well as the transport of machinery and supplies to and from the project site. These emissions include those produced on-site as the equipment is used and emissions from trucks transporting materials to and from the site.

As depicted in Table 4.3-2, construction-related emissions would not exceed the established SCAQMD thresholds for criteria pollutants. However, the proposed project would be required to adhere to standard SCAQMD regulations, such as implementing SCAQMD Rules 402 and 403. Rule 402 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off-site that are applicable to the project. Rule 403 requires that fugitive dust

be controlled with the best available control measures in order to reduce dust so that it does not remain visible in the atmosphere beyond the property line of the proposed project. Thus, short-term construction emission impacts would be less than significant in that regard.

Table 4.3-2
Construction Air Emissions

Emissions Source	Pollutant (pounds/day)[1]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Year 1						
Construction Emissions	3.30	33.66	26.81	0.06	2.77	1.69
Construction Emissions with SCAQMD Rules Applied[2]	3.30	33.66	26.81	0.06	2.45	1.65
SCAQMD Daily Significance Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
Year 2						
Construction Emissions	1.26	10.94	11.89	0.24	0.81	0.57
Construction Emissions with SCAQMD Rules Applied2	1.26	10.94	11.89	0.24	0.81	0.57
SCAQMD Daily Significance Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

Notes: ROG = reactive organic gases, NO_X = nitrous oxides, CO= carbon monoxide, SO_2 = sulfur dioxides, PM_{10} = coarse particulate matter, $PM_{2.5}$= fine particulate matter

1. Emissions were calculated using CalEEMod (CalEEMod Version 2016.3.1), as recommended by the SCAQMD.
2. The reduction/credits for construction emissions applied in CalEEMod are based on the application of dust control techniques as required by SCAQMD Rule 403. The dust control techniques include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces twice daily; cover stockpiles with tarps; water all haul roads three times daily; and limit speeds on unpaved roads to 15 miles per hour.

Refer to Appendix 8.1, for assumptions used in this analysis.

Naturally Occurring Asbestos

Asbestos is a term used for several types of naturally occurring fibrous minerals that are a human health hazard when airborne. The most common type of asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Asbestos is classified as a known human carcinogen by State, Federal, and international agencies and was identified as a toxic air contaminant by CARB in 1986. Asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released into the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed. According to the Department of Conservation Division of Mines and Geology, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report*, dated August 2000, serpentinite and ultramafic rocks are not known to occur within the project area. Thus, there would be no impact regarding naturally occurring asbestos.

OPERATIONAL IMPACTS

The proposed project would not include new permanent stationary or mobile sources of emissions, and therefore, by its very nature, would not generate quantifiable criteria emissions from project operations. The project does not propose any buildings and therefore no permanent source or stationary source emissions would result. Intersection improvements do not directly generate vehicle trips, a predominant source of air pollutant emissions. Vehicle trips are typically generated by land use changes that may be indirectly influenced by transportation improvements. The proposed project would not result in increases in the rate of vehicle trips. Rather, the proposed traffic facility improvements provide improved circulation through an area with existing and forecast traffic congestion. The project is considered necessary to implement the City's Capital Improvement Program to address bottlenecking occurring at the right turn lane from Cannon Street onto Serrano Avenue and insufficient right turn lane queuing capacity at the right turn lane from Serrano Avenue onto Cannon Street. In addition, the project would reduce idle time of vehicles at the project intersection. The longer a vehicle idles in a single location, the more air pollutant emissions are generated over the course of its travel than would otherwise have been emitted with reduced idling; thus, vehicle idle emissions would decrease as a result of the project. Therefore, impacts in this regard would be less than significant.

AIR QUALITY HEALTH IMPACTS[1]

Adverse health effects induced by criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, and the number and character of exposed individuals [e.g., age, gender]). In particular, O_3 precursors (VOCs and NO_X) affect air quality on a regional scale. Health effects related to O_3 are therefore the product of emissions generated by numerous sources throughout a region. Existing models such as AERMOD, CALINE3, and CALPUFF have limited sensitivity to small changes in criteria pollutant concentrations, and, as such, translating project-generated criteria pollutants to specific health effects or additional days of nonattainment would produce meaningless results. In other words, the project's less than significant increases in regional air pollution from criteria air pollutants would have nominal or negligible impacts on human health.

As noted by the SCAQMD in the *Application of the South Coast Air Quality Management District for Leave to File Brief of Amicus Curiae in Support of Neither Party and [Proposed] Brief of Amicus Curiae* (SCAQMD Amicus Brief, 2015) for the Supreme Court of California decision for *Sierra Club vs. County of Fresno (Friant Ranch L.P.)*, the SCAQMD acknowledged it would be extremely difficult, if not impossible to quantify health impacts of criteria pollutants for various reasons including modeling limitations as well as where in the atmosphere air pollutants interact and form. Furthermore, as noted by the San Joaquin Valley Air Pollution Control District (SJVAPCD) in the *Application for Leave to File Amicus Curiae Brief of San Joaquin Valley Unified Air Pollution Control District in Support of Defendant and Respondent, County of Fresno and Real Party of Interest and Respondent, Friant Ranch, L.P* (April 13, 2015), the SJVAPCD has acknowledged that currently available modeling tools are not equipped to provide a meaningful analysis of the correlation between an individual development project's air emissions and specific human health impacts.

Additionally, the SCAQMD acknowledges that health effects quantification from O_3, as an example, is correlated with the increases in ambient level of O_3 in the air (concentration) that an

[1] In accordance with the California Supreme Court decision for *Sierra Club v. County of Fresno* (S219783), December 24, 2018, this discussion has been included to disclose the potential human health impacts from the project's air emissions.

individual person breathes. SCAQMD's Brief of Amicus Curiae goes on to state that it would take a large amount of additional emissions to cause a modeled increase in ambient O_3 levels over the entire region. The SCAQMD states that based on their own modeling in the SCAQMD's 2012 Air Quality Management Plan, a reduction of 432 tons (864,000 pounds) per day of NO_X and a reduction of 187 tons (374,000 pounds) per day of VOCs would reduce O_3 levels at highest monitored site by only nine parts per billion. As such, the SCAQMD concludes that it is not currently possible to accurately quantify O_3-related health impacts caused by NO_X or VOC emissions from relatively small projects (defined as projects with regional scope) due to photochemistry and regional model limitations. Thus, as the project would not exceed SCAQMD thresholds for construction and would not have operational air emissions, the project would result in less than significant air quality health impacts.

CUMULATIVE CONSTRUCTION IMPACTS

With respect to the proposed project's construction-period air quality emissions and cumulative Basin-wide conditions, the SCAQMD has developed strategies (e.g., SCAQMD Rule 402 and Rule 403) to reduce criteria pollutant emissions outlined in the AQMP pursuant to Federal CAA mandates (as noted in Response 4.3(c)). As such, the proposed project would comply with SCAQMD Rule 402 and Rule 403 requirements. In addition, the proposed project would comply with adopted AQMP emissions control measures. Per SCAQMD rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., Rule 402 and 403 compliance, the implementation of all feasible mitigation measures, and compliance with adopted AQMP emissions control measures) would also be imposed on construction projects throughout the Basin, which would include related projects.

CUMULATIVE OPERATIONAL IMPACTS

As discussed previously, the proposed project would not include permanent stationary or mobile sources of emissions, and therefore, by its very nature, would not generate quantifiable criteria emissions from project operations. Additionally, adherence to SCAQMD rules and regulations would alleviate potential impacts related to cumulative conditions on a project-by-project basis. As a result, the proposed project would not contribute a cumulatively considerable net increase of any nonattainment criteria pollutant. Therefore, cumulative operational impacts associated with implementation of the proposed project would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

c) Expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses.[2] Examples of these sensitive receptors are residences, schools, hospitals, daycare centers, and places of worship. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes,

[2] Per the definition in the SCAQMD *Final Localized Significance Threshold Methodology*, revised July 2008, and various SCAQMD Rules (such as Rule 1470, paragraph [b][60]).

and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

The nearest sensitive receptors to the project site include residential uses adjacent to the east and south of the project boundary. Furthermore, there are sensitive receptors within the City of Villa Park approximately 80 feet to the west of the proposed construction boundary.

In order to identify impacts to sensitive receptors, the SCAQMD recommends addressing localized significance thresholds (LSTs) for construction and operations impacts (stationary sources only). The CO hotspot analysis following the LST analysis addresses localized mobile source impacts.

LOCALIZED SIGNIFICANCE THRESHOLDS

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. The SCAQMD provides the LST lookup tables for one, two, and five-acre projects emitting CO, NO_X, $PM_{2.5}$, or PM_{10} for 41 different Source Receptor Areas (SRA) throughout the Basin. The project site is located within SRA 17, Central Orange County.

Construction

Based on information obtained from CalEEMod, the project is anticipated to disturb up to 20 acres during the grading phase. The grading phase would take approximately 40 days in total to complete. As such, the project would actively disturb approximately 0.5 acres per day (20 acres divided by 40 days). Therefore, the LST thresholds for one acres were conservatively utilized for the construction LST analysis. As the nearest sensitive uses are adjacent to the project site, the lowest LST value of 25 meters was utilized. Table 4.3-3, *Localized Significance of Construction Emissions*, shows the localized construction-related emissions with and without SCAQMD Rules applied. It is noted that the localized emissions presented in Table 4.3-3 are less than those in Table 4.3-2, as localized emissions include only on-site emissions (i.e., from construction equipment and fugitive dust), and do not include off-site emissions (i.e., from hauling activities). As seen in Table 4.3-3, on-site emissions with and without SCAQMD rules applied would not exceed the LSTs for SRA 17.

Table 4.3-3
Localized Significance of Construction Emissions

Source	Pollutant (pounds/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Year 1				
On-Site Construction Emissions[1]	1.78	13.55	1.52	0.96
On-Site Construction Emissions with SCAMQD Rules Applied[1,2]	1.78	13.5	1.18	0.92
Localized Significance Threshold[3]	81	512	4	3
Thresholds Exceeded?	***No***	***No***	***No***	***No***
Year 2 of Construction				
On-Site Construction Emissions[4]	1.15	11.04	0.53	0.49
On-Site Construction Emissions with SCAQMD Rules Applied[2,4]	1.15	11.04	0.53	0.49
Localized Significance Threshold[2]	81	512	4	3
Thresholds Exceeded?	***No***	***No***	***No***	***No***

Note: NO_X = nitrous oxides, CO = carbon monoxide, PM_{10} = coarse particulate matter, $PM_{2.5}$= fine particulate matter
1. The grading phase emissions are presented as the worst-case scenario for NO_x, CO, PM_{10}, and $PM_{2.5}$.
2. The reduction/credits for construction emissions applied in CalEEMod are based on the application of dust control techniques as required by SCAQMD Rule 403. The dust control techniques include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces twice daily; cover stockpiles with tarps; water all haul roads three times daily; and limit speeds on unpaved roads to 15 miles per hour.
3. The Localized Significance Threshold was determined using Appendix C of the SCAQMD *Final Localized Significant Threshold Methodology* guidance document for pollutants NO_X, CO, PM_{10}, and $PM_{2.5}$. The Localized Significance Threshold was based on the anticipated daily acreage disturbance for construction, the total acreage for operational, the distance to sensitive receptors, and the source receptor area (SRA 17).
4. The paving phase emissions are presented as the worst-case scenario for NO_x, CO, PM_{10}, and $PM_{2.5}$.

Refer to Appendix 8.1 for assumptions used in this analysis.

Operations

According to SCAQMD localized significance threshold methodology, LSTs would apply to the operational phase of a project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). The proposed project is an intersection improvement project and does not include such uses. Thus, due to the lack of such emissions, no long-term localized significance threshold analysis is needed. No operational LST impacts would result in this regard.

Carbon Monoxide Hotspots

CO emissions are a function of vehicle idling time, meteorological conditions, and traffic flow. Under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels (i.e., adversely affecting residents, school children, hospital patients, the elderly, etc.).

The Basin is designated as an attainment/maintenance area for the Federal CO standards and an attainment area for State standards. There has been a decline in CO emissions even though vehicle miles traveled on U.S. urban and rural roads have increased. Nationwide estimated anthropogenic CO emissions have decreased 68 percent between 1990 and 2014. In 2014, mobile sources accounted for 82 percent of the nation's total anthropogenic CO emissions.[3] Three major control programs have contributed to the reduced per-vehicle CO emissions: exhaust standards, cleaner burning fuels, and motor vehicle inspection/maintenance programs.

[3] United States Environmental Protection Agency, *Carbon Monoxide Emissions*, https://cfpub.epa.gov/roe/indicator_pdf.cfm?i=10, accessed December 4, 2019.

According to the SCAQMD *CEQA Air Quality Handbook*, a potential CO hotspot may occur at any location where the background CO concentration already exceeds 9.0 parts per million (ppm), which is the 8-hour California ambient air quality standard. As previously discussed, the project is located in SRA 17, Central Orange County. Communities within SRAs are expected to have similar climatology and ambient air pollutant concentrations. The monitoring station representative of SRA 17 is the Anaheim – 812 West Vermont Street, which is located approximately 7.07 miles west of the project site. The highest CO concentration at the 812 West Vermont Street monitoring station was measured at 2.69 ppm in 2018.[4] As such, the background CO concentration near the project does not exceed or approach the 9.0 ppm threshold and a CO hotspot would not occur. Therefore, CO hotspot impacts would be less than significant in this regard.

Air Quality Health Impacts

As evaluated above, the project's localized emissions would not exceed the SCAQMD's LSTs. Therefore, the project would not exceed the most stringent applicable Federal or State ambient air quality standards for emissions of CO, NO_X, PM_{10}, or $PM_{2.5}$, which were developed to represent levels at which the most susceptible persons (children and the elderly) are protected from health effects. In other words, the ambient air quality standards are purposefully set in a stringent manner to protect sensitive populations with respiratory problems (e.g., children, the elderly, etc.). Thus, the project's localized emissions would not create an air quality health impact, and a less than significant impact would occur in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

d) Expose sensitive receptors to substantial pollutant concentrations?

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed project does not include any uses identified by the SCAQMD as being associated with odors.

Construction activities associated with the project may generate detectable odors from heavy-duty equipment exhaust. However, construction-related odors would be short-term in nature and cease upon project completion. In addition, the project would be required to comply with the California Code of Regulations (CCR), Title 13, sections 2449(d)(3) and 2485, which minimizes the idling time of construction equipment either by shutting it off when not in use or by reducing the time of idling to no more than five minutes. This would reduce the detectable odors from heavy-duty equipment exhaust. Any odor impacts to existing adjacent land uses would be short-term and not substantial. As such, the project would not result in other emissions (such as those

[4] California Air Resources Board, *Air Quality data (PST) Query Tool*, https://www.arb.ca.gov/aqmis2/aqdselect.php, accessed December 4, 2019.

leading to odors) adversely affecting a substantial number of people. Impacts would be less than significant in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

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4.4 BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				✓
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				✓
c. 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?				✓
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?		✓		
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			✓	
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?				✓

Impact Analysis:

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

The project area surrounding the intersection of Cannon Street and Serrano Avenue is urbanized and developed. Vegetation in the project area is limited to ornamental landscaping along both roadways. The proposed roadway improvements would have no impact on any special status wildlife and/or plant species as the existing vegetation is limited mostly to street trees and shrubs and is surrounded by the roadway intersection and residential uses. Additionally, according to the General Plan PEIR, the City's urbanized areas provide low habitat value for sensitive species. Thus, project construction and operations would not modify sensitive habitat or adversely impact special status plants and/or wildlife species. No impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Significance Determination After Mitigation: No Impact.

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

Riparian habitats are those occurring along the banks of rivers and streams. Sensitive natural communities are natural communities that are considered rare in the region by regulatory agencies, known to provide habitat for sensitive animal or plant species, or known to be important wildlife corridors. According to the General Plan PEIR, riparian habitat and wetlands within the existing urbanized area of the City occur mainly near the Santa Ana River, Santiago Creek, Irvine Lake, Villa Park Reservoir, and Peters Canyon Reservoir. The project site is not located near any of these areas and there is no riparian habitat or other sensitive natural communities present on the project site or in the vicinity. Thus, project implementation would not significantly impact any riparian habitat or other sensitive natural community. No impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Significance Determination After Mitigation: No Impact.

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

Wetlands are defined under the Federal Clean Water Act as land that is flooded or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that normally does support, a prevalence of vegetation adapted to life in saturated soils. Wetlands include areas such as swamps, marshes, and bogs. There are no Federally protected wetlands present on the project site. Thus, project implementation would not impact Federally protected wetlands through direct removal, filling, hydrological interruption, or other means. No impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Significance Determination After Mitigation: No Impact.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The City's primary functional wildlife corridors include Santiago Creek through the center of the City; the northeastern portion of the City and the Southern California Edison utility corridors, which link with Santiago Oaks Park; and preserved hillsides and ridgelines in the southeastern portion of the City that link with Peters Canyon Park. In addition, a significant amount of East Orange is currently undeveloped, including the Irvine Ranch Land Reserve and the Nature Reserve of Orange County established by the *Orange County Central/Coastal Natural Community*

Conservation Plan (NCCP). These areas have the potential to act as wildlife corridors used by numerous wildlife species in the region.

As discussed above, the project site is fully urbanized, consists entirely of developed or disturbed/ornamental habitat, and is located outside of preserves and wildlife corridors identified in the General Plan. Further, the site is surrounded by other urban uses (e.g., roadways and residences). There are no areas within the project vicinity which could function as wildlife corridors. However, project implementation would require the removal of up to eight mature ornamental street trees (Canary Island pine) along Cannon Street. These trees have the potential to provide suitable nesting opportunities for nesting birds. The Migratory Bird Treaty Act (MBTA) governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. To reduce potential impacts to nesting birds, Mitigation Measure BIO-1 requires a pre-construction nesting bird clearance survey to determine the presence/absence, location, and status of any active nests on or adjacent to the project site should vegetation and tree removal occur during the bird nesting season. If the nesting bird clearance survey indicates the presence of nesting birds, Mitigation Measure BIO-1 requires buffers to ensure that any nesting birds are protected pursuant to the MBTA. With implementation of Mitigation Measure BIO-1, the project's potential construction-related impacts to migratory birds would be reduced to a less than significant level.

Significance Determination: Potentially Significant Impact.

Mitigation Measures:

BIO-1 In the event that vegetation and tree removal should occur between January 15 and September 15, the project applicant shall retain a qualified biologist to conduct a nesting bird survey no more than three days prior to commencement of construction activities. The biologist conducting the clearance survey shall document the negative results if no active bird nests are observed on the project site or within the vicinity during the clearance survey with a brief letter report, submitted to the City of Orange Community Development Department prior to construction, indicating that no impacts to active bird nests would occur before construction can proceed. If an active avian nest is discovered during the pre-construction clearance survey, construction activities shall stay outside of a 300-foot buffer around the active nest. For listed and raptor species, this buffer shall be 500 feet. A biological monitor shall 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. Prior to the commencement of construction activities and the issuance of any permits, results of the pre-construction survey and any subsequent monitoring shall be provided to the City of Orange Community Development Department.

Significance Determination After Mitigation: Less Than Significant Impact With Mitigation Incorporated.

e) Conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance?

Refer to Responses 4.1(c) and 4.4(f).

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Significance Determination After Mitigation: Less Than Significant Impact.

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?

The City is subject to the Natural Community Conservation Plan (NCCP). General Plan PEIR Figure 5.4-2, *NCCP Habitat Reserve Area*, identifies areas within the City that are designated NCCP habitat reserve areas. According to General Plan PEIR Figure 5.4-2, the project site is not located within the NCCP's designated reserve, non-reserve open space, or special linkage areas. No other approved local, regional, or State habitat conversation plans apply to the site. Thus, the project would not conflict with the provisions of an adopted Habitat Conservation Plan, NCCP, or other approved local, regional, or State habitat conservation plan. No impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Significance Determination After Mitigation: No Impact.

4.5 CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?				✓
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?		✓		
c. Disturb any human remains, including those interred outside of dedicated cemeteries?			✓	

The information presented in this analysis is based on the *Cultural and Paleontological Resources Assessment Memo for the Cannon and Serrano Intersection Widening Project, City of Orange, Orange County, California* (Cultural and Paleontological Resources Assessment) prepared by Cogstone Resource Management (dated June 2020); refer to Appendix 8.2, *Cultural and Paleontological Resources Assessment*.

Impact Analysis:

a) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?

The Cultural and Paleontological Resources Assessment included a records search of the California Historical Resources Information System (CHRIS) at the South Central Coastal Information Center. The search was conducted to identify previously conducted cultural resources studies and previously recorded cultural resources within a one-mile radius of the project site. Based on the record search, 23 cultural resources studies and five cultural resources were identified within a one-mile radius of the project site; however, none of the previously conducted studies or cultural resources encompassed the project site. The five cultural resources found within one mile of the site include three prehistoric archaeological sites, one historical archaeological site, and one historic built environment resource; refer to Appendix 8.2 Cultural and Paleontological Resources Assessment, Table 3, *Previously Recorded Cultural Resources within One Mile of Project Area*.

In addition to the SCCIC records search, a variety of sources were consulted in to obtain information regarding the cultural context of the project area. Sources included the National Register of Historic Places (NRHP), California Register of Historic Resources (CRHR), California Historical Resources Inventory (CHRI), California Historical Landmarks (CHL), and California Points of Historical Interest (CPHI). Specific information about the project area was also obtained from historic maps and aerial photographs.

The Orange County Archives and Orange Community Historical Society was also consulted. According to the Orange County Archives, the project area was used solely as farmland in the past.

On November 1, 2019, a pedestrian survey was conducted in the project area. Due to the heavily developed project area, the pedestrian survey consisted of 10-meter wide transects. Smaller one-meter wide transects were utilized in the northern portion of project area. Ground visibility within the project area was generally poor (less than 10 percent) due to existing hardscaping and/or landscaping. Where not landscaped, much of the area was covered in dry grass, weeds, eucalyptus trees, and California pepper trees. No prehistoric or historic resources were observed within the project area during the survey.

Based on the results of the records search and pedestrian survey, no historic resources occur on the project site. As such, no impacts to historical resources would occur with project development.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?

Based on the results of the records search and pedestrian survey conducted as part of the Cultural and Paleontological Resources Assessment, the project area has low sensitivity for archaeological resources. Nevertheless, given that the project would require excavation to relocate existing utilities, signs, and street lights along Serrano Avenue and Cannon Street, there is potential that project-related ground-disturbing activities could uncover previously undiscovered cultural resources. In the unlikely event that archaeological resources are encountered during project construction, Mitigation Measure CUL-1 would require all project construction efforts to halt until an archaeologist examines the site, identifies the archaeological significance of the find, and recommends a course of action. With implementation of Mitigation Measure CUL-1, the project would not cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines, and impacts would be reduced to less than significant levels.

Significance Determination: Potentially Significant Impact.

Mitigation Measures:

CUL-1 If previously unidentified cultural resources are encountered during ground-disturbing activities, work in the immediate area shall halt and a qualified archaeologist, defined as an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards for archaeology, shall be contacted immediately to evaluate the find. The City of Orange Public Works Department shall include a standard inadvertent discovery clause in the construction contract to inform contractors of this requirement. If the discovery proves to be significant under CEQA, the qualified archaeologist shall expeditiously prepare and implement a research design and archaeological data recovery plan that captures those categories of data for which the site is significant in accordance with Section 15064.5 of the CEQA Guidelines. The archaeologist shall also expeditiously perform appropriate technical analyses, prepare a comprehensive report complete with methods, results, and recommendations, and provide for the permanent curation or repatriation of the recovered resources in cooperation with the designated most likely descendant as needed. The report shall be submitted to the City of Orange

Community Development Department, the South Central Coastal Information Center, and the State Historic Preservation Office (SHPO), if required. In the event that an identified cultural resource(s) is of Native American origin, the qualified archaeologist shall consult with the City of Orange to implement Native American consultation procedures. Construction shall not resume until the qualified archaeologist states in writing that the proposed construction activities would not significantly damage any archaeological resources.

Level of Significance After Mitigation: Less Than Significant Impact With Mitigation Incorporated.

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

Due to the level of disturbance on the project site and in the site vicinity, it is not anticipated that human remains, including those interred outside of formal cemeteries, would be encountered during earth removal or ground-disturbing activities. Nonetheless, if human remains are found, those remains would require proper treatment, in accordance with applicable laws. State of California Public Resources Health and Safety Code Section 7050.5 through 7055 describe the general provisions for human remains. Specifically, Health and Safety Code Section 7050.5 describes the requirements if any human remains are accidentally discovered during excavation of a site. As required by State law, the requirements and procedures set forth in Section 5097.98 of the California Public Resources Code would be implemented, including notification of the County Coroner, notification of the Native American Heritage Commission and consultation with the individual identified by the Native American Heritage Commission to be the most likely descendant. If human remains are found during excavation, excavation must stop near the find and any area that is reasonably suspected to overlay adjacent remains until the County Coroner has been called out, the remains have been investigated, and appropriate recommendations have been made for the treatment and disposition of the remains. Following compliance with the aforementioned regulations, impacts related to the disturbance of human remains are less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

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4.6 ENERGY

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			✓	
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			✓	

Impact Analysis:

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

PROJECT-RELATED SOURCES OF ENERGY CONSUMPTION

This analysis focuses on the one source of energy that is relevant to the proposed project: transportation fuel for vehicle trips associated with project construction. The amount of operational fuel consumption was estimated using the California Air Resources Board's (CARB) EMissions FACtor 2017 (EMFAC2017) computer program which provides projections for typical daily fuel usage in the County, and the project's annual vehicle miles traveled (VMT) outputs from the California Emissions Estimator Model version 2016.3.2 (CalEEMod). The estimated construction fuel consumption is based on the project's construction equipment, timing/phasing, and hours of duration for construction equipment. The results of the CalEEMod modeling are included in Appendix 8.1, *Air Quality/Greenhouse Gas/Energy Data*

As a roadway improvement project, project operations would not involve new buildings or uses which would introduce new permanent stationary or mobile sources of emissions within the project area. The project would not increase the roadway capacity of the intersection or represent a trip generating land use which would generate new operational emissions. As a result, project operations would not result in increased energy consumption from electricity, natural gas, or operational fuel usage. The project's estimated construction-related energy consumption is summarized in Table 4.6-1, *Energy Consumption*. As shown in Table 4.6-1, the project would increase the heavy-duty diesel vehicle fuel consumption within the County by 0.009 percent during construction.

Table 4.6-1
Energy Consumption

Energy Type	Project Annual Energy Consumption[1]	Orange County Annual Energy Consumption[2]	Percentage Increase Countywide[2]
Fuel Consumption			
• Construction (Heavy-Duty Diesel Vehicle) Fuel Consumption[2,3]	11,175 gallons	128,474,142 gallons	0.009%

Notes:
1. As modeled in CalEEMod version 2016.3.2.
2. Project fuel consumption calculated based on CalEEMod results. Countywide fuel consumption is from the California Air Resources Board EMFAC2017 model for the year 2020.
3. The project is a utility improvement project which would not involve new buildings, increased vehicular trips, or generate additional energy and natural gas consumption. As such, the project would not have annual energy, natural gas, or operational fuel consumption, and would only have fuel consumption during construction.

Refer to Appendix 8.1, for assumptions used in this analysis.

CONSTRUCTION ENERGY CONSUMPTION

Project construction 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 site clearing, grading, and construction. Fuel energy consumed during construction would be temporary and would not represent a significant demand on energy resources. In addition, some incidental energy conservation 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 U.S. Environmental Protection Agency (EPA) and CARB 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. There is growing recognition among developers and retailers that sustainable construction is not prohibitively expensive, and that there is a significant cost-savings potential in green building practices and materials.

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 project-related 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. As indicated in Table 4.6-1, the project's fuel consumption from construction would be approximately 11,175 gallons, which would increase fuel use in the County by 0.009 percent. As such, construction would have a nominal 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. Therefore, construction fuel consumption would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature. A less than significant impact would occur in this regard.

OPERATIONAL ENERGY CONSUMPTION

As discussed above the project would not include operational vehicle trips. As such, the project would not have operational energy consumption. The project would not result in the inefficient, wasteful, or unnecessary consumption of building energy. A less than significant impact would occur in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

As stated above in Response 4.6(a), project operations would not have operational energy, natural gas, or fuel consumption. The project would not result in increased vehicular trips to and from the project site. The project would include fuel consumption in the form of heavy-duty diesel fuel consumption; however, this fuel consumption would cease immediately once construction is complete. As the project would not have any operational energy, natural gas, or fuel consumption, the project would not conflict with any State or local plan for renewable energy or energy efficiency. A less than significant impact would occur in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

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4.7 GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
1) 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.				✓
2) Strong seismic ground shaking?			✓	
3) Seismic-related ground failure, including liquefaction?				✓
4) Landslides?			✓	
b. Result in substantial soil erosion or the loss of topsoil?			✓	
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?			✓	
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?			✓	
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?				✓
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		✓		

This section is primarily based upon the following technical studies; refer to Appendix 8.2, *Cultural and Paleontological Resources Assessment*, and Appendix 8.3, *Geotechnical Investigation*:

- GMU Geotechnical, *Preliminary Geotechnical Investigation Report, Cannon Street/Serrano Avenue Intersection Widening, City of Orange, California* (Geotechnical Investigation), dated March 25, 2020; and
- Cogstone, *Cultural and Paleontological Resources Assessment Memo for the Cannon and Serrano Intersection Widening Project, City of Orange, Orange County, California* (Cultural and Paleontological Resources Assessment), dated June 2020.

Impact Analysis:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

1) 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.

Southern California, including the project area, is subject to the effects of seismic activity due to the active faults that traverse the area. Active faults are defined as those that have experienced surface displacement within Holocene time (approximately the last 11,000 years) and/or are in a State-designated Alquist-Priolo Earthquake Fault Zone. According to the General Plan PEIR and Geotechnical Investigation, the site is not located within an official Alquist-Priolo Earthquake Fault Zone and no known active faults cross the site. The nearest known active fault is the Elsinore-Whittier fault, located approximately three miles to the north. As such, no impact would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

2) Strong seismic ground shaking?

Southern California has numerous active seismic faults subjecting residents to potential earthquake and seismic-related hazards. Seismic activity poses two types of potential hazards for residents and structures, categorized either as primary or secondary hazards. Primary hazards include ground rupture, ground shaking, ground displacement, subsidence, and uplift from earth movement. Primary hazards can also induce secondary hazards such as ground failure (lurch cracking, lateral spreading, and slope failure), liquefaction, water waves (seiches), movement on nearby faults (sympathetic fault movement), dam failure, and fires.

As stated above, the nearest known active fault is the Elsinore-Whittier fault, located approximately three miles to the north. Given the proximity of the site to this and numerous other active and potentially active faults, the site would likely experience strong seismic ground shaking in the future. However, as an intersection improvement project, the project would not affect subsurface geology, increase the probability of seismic ground shaking, or develop any structures. Roadway design and pavement construction would comply with the California Building Code as incorporated by reference in Municipal Code Chapter 15.04, *California Building Code*. Thus, the project would not expose people or structures to substantial adverse effects related to strong seismic ground shaking. Impacts would be less than significant in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

3) Seismic-related ground failure, including liquefaction?

Liquefaction is a seismic phenomenon in which loose, saturated, granular soils behave similarly to a fluid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions coexist: 1) shallow groundwater; 2) low density non-cohesive (granular) soils; and 3) high-intensity ground motion. Saturated, loose to medium dense, near surface cohesionless soils exhibit the highest liquefaction potential, while dry, dense, cohesionless soils and cohesive soils exhibit low to negligible liquefaction potential. In general, cohesive soils are not considered susceptible to liquefaction. Effects of liquefaction on level ground include settlement, sand boils, and bearing capacity failures below structures. Dynamic settlement of dry loose sands can occur as the sand particles tend to settle and densify as a result of a seismic event.

According to the Geotechnical Investigation and Figure 5.6-2, *Environmental and Natural Hazard Policy Map*, of the General Plan PEIR, the project site is not located in an area that is subject to seismic-induced liquefaction. Further, California Geological Survey maps do not identify any liquefaction hazard areas within the project vicinity.[1] No impact would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

4) Landslides?

According to the Geotechnical Investigation, Figure 5.6-2, *Environmental and Natural Hazard Policy Map*, of the General Plan PEIR, and the California Geological Survey, the project site is not located within an area mapped as having the potential for seismic-induced landslides.[2] Proposed improvements would occur within existing roadway right-of-way and would not encroach onto slopes associated with adjacent residential uses (located at lower elevations). As such, the project would not exacerbate existing geological hazards including landslides. Impacts in this regard would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

b) Result in substantial soil erosion or the loss of topsoil?

The grading activities required for project implementation would result in exposed soils that may be subject to wind and water erosion. However, short-term construction impacts would be minimal as the project's total area of disturbance during construction (approximately 0.3-acre) would be less than one acre in size and grading activities consist of a maximum of 3,500 cubic yards of cut and 600 cubic yards of fill. Construction activities would also be required to comply with Municipal Code Chapter 7.01, *Water Quality and Stormwater Discharges*. This chapter includes conditions and requirements established by the City related to the control of urban

[1] California Geological Survey, *Earthquake Zones of Required Investigation Orange Quadrangle, Orange County, California*, April 15, 1998.

[2] Ibid.

pollutants to stormwater runoff, including soil erosion runoff. Following conformance with Municipal Code Chapter 7.01, short-term construction impacts would be less than significant.

Similar to existing conditions, no long-term operational impacts would occur as the intersection would be paved with no exposed soils at project completion.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in an on-site or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Refer to Responses 4.7(a)(3), 4.7(a)(4), and 4.7(d) for a discussion concerning liquefaction, landslides, and expansive soils.

Lateral spreading is limited displacement ground failure, often associated with liquefaction. Lateral spreading is typically exemplified by the formation of vertical cracks on the surface of liquefied soils, and usually takes place on gently sloping ground or level ground with nearby free surface such as a drainage or stream channel. As stated, the project site is not located in an area that is subject to liquefaction. Thus, the probability of lateral spreading occurring during a seismic event is also considered to be negligible. No impacts would occur in this regard.

Subsidence can occur in various ways during an earthquake. Large areas of land can subside drastically during an earthquake because of offset along fault lines; land subsidence can also occur as a result of settling and compacting of unconsolidated sediment (i.e., settlement) from seismic shaking. Collapsible soils generally have loose soil structures that can greatly decrease in volume upon wetting, additional loading, or both. Soil collapse typically occurs due to the addition of water. The Geotechnical Investigation identifies the subsurface materials found within the two exploratory drill holes: engineered fill, alluvial deposits, and terrace deposits. The alluvial deposits generally consist of damp to moist, loose to medium dense, silty sands and clayey sands. The terrace deposits consist of damp to moist, medium dense to very dense, clayey sands. Additionally, groundwater was not encountered during the subsurface investigation to a maximum depth of 31 feet below existing grade and is estimated to be deeper than 40 feet. Given that the subsurface materials on-site are generally damp to moist and medium in density, and the groundwater table is anticipated to be deeper than 40 feet, potential for subsidence or collapse is less than significant.

The Geotechnical Investigation also includes a number of recommendations regarding site preparation and grading, fill material and placement, temporary excavations, seismic design, foundation system design, and utility trench backfill considerations, among others, that would ensure project impacts on existing geologic hazards on-site are not exacerbated beyond existing conditions. Following conformance with the site-specific seismic design recommendations identified in the Geotechnical Investigation, impacts in this regard would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

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?

Expansive soils are those that undergo volume changes as moisture content fluctuates, swelling substantially when wet or shrinking when dry. Soil expansion can damage structures by cracking foundations, causing settlement, and distorting structural elements. Based on the Geotechnical Investigation, existing near-surface soils are anticipated to have a medium expansion potential. Therefore, expansive soil criteria are considered in the design of the proposed improvements. Following conformance with the site-specific design recommendations identified in the Geotechnical Investigation, impacts related to expansive soils would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant 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?

No septic tanks or alternative wastewater systems would be constructed as part of the project. Thus, no impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The project's potential to impact paleontological resources was evaluated as part of the Cultural and Paleontological Resources Assessment; refer to Appendix 8.2. In order to determine the project site's paleontological sensitivity, a paleontological record and literature search were completed by the Natural History Museum of Los Angeles County. In addition, a field survey was completed to confirm field observations are consistent with geological maps for the area, assess sediments for their potential to contain fossils, and verify the exact location and condition or integrity of any known resources.

The project site is underlain by early Pleistocene to Holocene alluvial fans, and latest Oligocene to latest early Miocene undifferentiated Sespe-Vaqueros Formation sediments. According to the Cultural and Paleontological Resources Assessment, no paleontological resources have been identified in artificial fill, Holocene, or Pleistocene sediments within a five-mile radius of the project site. However, six fossil localities have been recorded by the Natural History Museum of Los Angeles County in undifferentiated Sespe-Vaqueros Formation near the project area. No resources were observed within the project area during the field survey.

As the proposed project would have a maximum excavation depth of four feet below ground surface, the Cultural and Paleontological Resources Assessment determined that project implementation would encounter Sespe-Vaqueros Formation soils with the potential to support buried paleontological resources. As a result, Mitigation Measure GEO-1 would require a qualified paleontological monitor be present during the project's ground-disturbing activities. In the event that paleontological resources are encountered during ground-disturbing activities, Mitigation Measure GEO-1 would require all construction activities within 50 feet of the discovery to halt until a qualified paleontologist identifies the paleontological significance of the find and recommends a course of action. Thus, following implementation of Mitigation Measure GEO-1, impacts would be reduced to less than significant levels.

Significance Determination: Potentially Significant Impact.

Mitigation Measures:

GEO-1 The City of Orange shall retain a retained a qualified paleontologist (B.S./B.A. in geology, or related discipline with an emphasis in paleontology and demonstrated experience and competence in paleontological research, fieldwork, reporting, and curation) to monitor ground-disturbing activities during project construction. In the event that paleontological resources are encountered during ground-disturbing activities, all construction activities in the vicinity of the find shall halt within 50 feet of the discovery until the qualified paleontologist identifies the paleontological significance of the find and recommends a course of action. Construction shall not resume within 50 feet of the discovery until the site paleontologist states in writing that the proposed construction activities would not significantly damage paleontological resources.

Significance Determination After Mitigation: Less Than Significant Impact With Mitigation Incorporated.

4.8 GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			✓	
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			✓	

Global Climate Change

California is a substantial contributor of global greenhouse gases (GHGs), emitting over 424 million tons of carbon dioxide (CO_2) per year.[1] Climate studies indicate that California is likely to see an increase of three to four degrees Fahrenheit over the next century. Methane (CH_4) is also an important GHG that potentially contributes to global climate change. GHGs are global in their effect and increase the Earth's ability to absorb heat in the atmosphere. As primary GHGs have a long lifetime in the atmosphere, accumulate over time, and are generally well-mixed, their impact on the atmosphere is mostly independent of the point of emission.

The impact of human activities on global climate change is apparent in observational records. Air trapped by ice has been extracted from core samples taken from polar ice sheets to determine the global atmospheric variation of CO_2, CH_4, and nitrous oxide (N_2O) from before the start of industrialization (approximately 1750) to over 650,000 years ago. For that period, it was found that CO_2 concentrations ranged from 180 to 300 parts per million. For the period from approximately 1750 to the present, global CO_2 concentrations increased from a pre-industrialization period concentration of 280 to 379 parts per million in 2005, with the 2005 value far exceeding the upper end of the pre-industrial period range.

The Intergovernmental Panel on Climate Change (IPCC) developed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. It concluded that a stabilization of GHGs at 400 to 450 parts per million CO_2 equivalent[2] (CO_2e) concentration is required to keep global mean warming below two degrees Celsius, which in turn is assumed to be necessary to avoid significant levels of climate change.

Regulations and Significance Criteria

Various Statewide and local initiatives to reduce the State's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way, and there is a real potential for severe adverse environmental, social, and economic effects in the long term. Every nation emits GHGs and as a result makes an incremental cumulative contribution to global

[1] California Environmental Protection Agency, *California Greenhouse Gas Emissions for 2000 to 2017*, https://ww2.arb.ca.gov/ghg-inventory-data, accessed December 4, 2019.

[2] Carbon Dioxide Equivalent (CO_2eq) – A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

climate change; therefore, global cooperation is necessary to reduce the rate of GHG emissions enough to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

Assembly Bill 32 (California Global Warming Solutions Act of 2006). California passed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, Sections 38500 - 38599). Assembly Bill (AB) 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on Statewide GHG emissions. AB 32 requires that Statewide GHG emissions be reduced to 1990 levels by 2020. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

Executive Order S-3-05. Executive Order S-3-05 set forth a series of target dates by which Statewide emissions of GHGs would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

Senate Bill 32. Signed into law on September 2016, Senate Bill (SB) 32 codifies the 2030 GHG reduction target in Executive Order B-30-15 (40 percent below 1990 levels by 2030). The bill authorizes CARB to adopt an interim GHG emissions level target to be achieved by 2030.

CARB Scoping Plan. On December 11, 2008, CARB adopted the *Climate Change Scoping Plan* (Scoping Plan), which functions as a roadmap to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. The Scoping Plan contains the main strategies California will implement to reduce CO_2e emissions by 174 million metric tons (MT), or approximately 30 percent, from the State's projected 2020 emissions level of 596 million MT CO_2eq under a business as usual (BAU)[3] scenario. This is a reduction of 42 million MT CO_2e, or almost ten percent, from 2002 to 2004 average emissions, but requires the reductions in the face of population and economic growth through 2020.

The Scoping Plan calculates 2020 BAU emissions as the emissions that would be expected to occur in the absence of any GHG reduction measures. The 2020 BAU emissions estimate was derived by projecting emissions from a past baseline year using growth factors specific to each of the different economic sectors (e.g., transportation, electrical power, commercial and residential, industrial, etc.). CARB used three-year average emissions, by sector, for 2002 to 2004 to forecast emissions to 2020. The measures described in the Scoping Plan are intended to reduce the projected 2020 BAU to 1990 levels, as required by AB 32.

AB 32 requires CARB to update the Scoping Plan at least once every five years. CARB adopted the first major update to the Scoping Plan on May 22, 2014. The updated Scoping Plan identifies the actions California has already taken to reduce GHG emissions and focuses on areas where

[3] "Business as Usual" refers to emissions that would be expected to occur in the absence of GHG reductions; refer to http://www.arb.ca.gov/cc/inventory/data/bau.htm. Note that there is significant controversy as to what BAU means. In determining the GHG 2020 limit, CARB used the above as the "definition." It is broad enough to allow for design features to be counted as reductions.

further reductions could be achieved to help meet the 2020 target established by AB 32. The Scoping Plan update also looks beyond 2020 toward the 2050 goal, established in Executive Order S-3-05, and observes that "a mid-term statewide emission limit will ensure that the State stays on course to meet our long-term goal."

Greenhouse Gas Emissions Thresholds

On March 24, 2020, the City adopted the *Guidance for Greenhouse Gas Emissions Analysis* (Guidance for GHG Analysis) to provide guidance for evaluating GHG emissions analyses in CEQA documents for all non-exempt projects in which the City is the lead agency. However, the City did not adopted a numerical (quantitative) significance threshold for assessing impacts related to GHG emissions, nor have the South Coast Air Quality Management District (SCAQMD), CARB, or any other State or regional agency. Nevertheless, as detailed in the Guidance for GHG Analysis, the City desires to have a consistent GHG analysis methodology in its CEQA documents and has accepted GHG analyses that use the tiered approach recommended in the SCAQMD's *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold* (Guidance Document), dated October 2008. The SCAQMD Board has not approved the thresholds; however, the Guidance Document provides substantial evidence supporting the tiered approaches to significance of GHG emissions:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a GHG reduction plan. If a project is consistent with a qualifying local GHG reduction plan, it does not have significant GHG emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:
    - All land use types: 3,000 MTCO2e per year
    - Based on land use type: residential: 3,500 MTCO2e per year; commercial: 1,400 MTCO2e; or mixed use: 3,000 $MTCO_2e$
- Tier 4 has the following options:
    - Option 1: Reduce business as usual (BAU) emissions by a certain percentage; this percentage is currently undefined.
    - Option 2: Early implementation of applicable AB 32 Scoping Plan measures.
    - Option 3: 2020 target: 3.0 MTCO2e/SP/year for projects and 4.1 MTCO2e/SP/year for plans
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The SCAQMD's draft thresholds uses the Executive Order S-3-05 Year 2050 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to worldwide effort to cap CO_2 concentrations at 450 parts per million, thus stabilizing global climate. As such, the City has accepted GHG analyses that use the "Tier 3" quantitative thresholds recommended in the SCAQMD's Interim Thresholds document for commercial, residential, mixed use, and industrial development projects:

- Industrial Projects - 10,000 $MTCO_2e$ per year.

- Residential, Commercial, and Mixed-Use Projects (including industrial parks, warehouses, etc.) - 3,000 $MTCO_2e$ per year. (This is generally equivalent to an approximately 70 unit single family residential development.)

Furthermore, a project's consistency with the goals, policies and implementation programs of the City's 2010 General Plan related to GHGs must also be discussed. In particular, the analysis should review Table NR-1 in the Natural Resources Element of the General Plan and discuss the project's consistency with identified climate change-related policies. In addition, the analysis should discuss CARB's 2017 Scoping Plan or future updates to the Scoping Plan, as well as the most recent draft of the Southern California Association of Governments (SCAG) *Regional Transportation Plan/Sustainable Communities Strategies* (RTP/SCS), and identify the extent to which the project complies with emissions reduction measures and policies applicable to the project (if any).

The amount of GHG emissions that would be attributable to the project was calculated using the recommended California Emissions Estimator Model version 2016.3.2 (CalEEMod), as described below. The estimated emissions inventory is also used to determine if there would be a reduction in the project's incremental contribution of GHG emissions as a result of compliance with regulations and requirements adopted to implement plans for the reduction or mitigation of GHG emissions. The City's lowest recommended SCAQMD threshold of 3,000 $MTCO_2e$ per year was adopted for this project.

Impact Analysis:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

PROJECT-RELATED GREENHOUSE GAS EMISSIONS

The project proposes to add a second dedicated right turn lane on northbound Cannon Street to eastbound Serrano Avenue, and to widen the existing right turn lane on westbound Serrano Avenue to northbound Cannon Street approximately four feet. The project would not include any operational area source, mobile, water, energy or waste GHG emissions. Project-related GHG emissions would include emissions from construction activities. Construction of the project would result in direct emissions of CO_2, N_2O, and CH_4 from the operation of construction equipment. Transport of materials and construction workers to and from the project site would also result in GHG emissions. Construction activities would be short-term in duration and would cease upon project completion. Construction-generated GHG emissions were calculated using CalEEMod. Table 4.8-1, *Estimated Greenhouse Gas Emissions*, presents the estimated CO_2, CH_4, and N_2O emissions of the proposed project, which estimates a total of 148 $MTCO_2eq$ generated during construction of the proposed project; refer to Appendix 8.1, *Air Quality/Greenhouse Gas/Energy Data*, for detailed model input/output data.

Table 4.8-1
Estimated Greenhouse Gas Emissions

Source	CO_2	CH_4		N_2O		Total Metric Tons of CO_2eq[2,3]
	Metric Tons/yr[1]	Metric Tons/yr[1]	Metric Tons of CO_2eq[1]	Metric Tons/yr[1]	Metric Tons of CO_2eq[1]	
Direct Emissions						
Construction Year 1	126.59	0.03	0.76	0.00	0.00	127.35
Construction Year 2	20.52	0.00	0.13	0.00	0.00	20.65
Total Project-Related Emissions[2]	***148 $MTCO_2e/yr$***					
SCAQMD GHG Threshold	***3,000 $MTCO_2e/yr$***					
Exceeds Threshold?	***No***					

Notes: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxides, $MTCO_2eq/yr$ = metric tons of carbon dioxide equivalent per year

1. Emissions were calculated using CalEEMod version 2016.3.2, as recommended by the SCAQMD.
2. Totals may be slightly off due to rounding.
3. Carbon dioxide equivalent values calculated using the United States Environmental Protection Agency Website, *Greenhouse Gas Equivalencies Calculator*, http://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator, accessed December 30, 2019.

Refer to Appendix 8.1, *Air Quality/Greenhouse Gas/Energy Data*, for detailed model input/output data.

In terms of operational GHG emissions, the proposed project involves roadway improvements and does not propose a trip-generating land use. The proposed project would not include the provision of new permanent stationary or mobile sources of emissions, and therefore, by its very nature, would not generate quantifiable GHG emissions from project operations. The project does not propose any buildings and therefore no permanent source or stationary source emissions. In addition, intersection improvements do not directly generate vehicle trips, a predominant source of GHG emissions. Vehicle trips are generated by land use changes that may be indirectly influenced by transportation improvements. The proposed project would not result in increases in the rate of vehicle trips. Rather, the proposed traffic facility improvements provide improved circulation through an area with existing and anticipated future traffic congestion.

Furthermore, once the proposed transportation improvements are implemented, there would be no resultant increase in automobile trips to the area, since the improved facilities would not require daily visits. Therefore, neither construction nor operation of the project would generate GHG emissions in excess of the baseline conditions. The project would relieve congestion and improve roadway operations and would not directly generate new trips or GHG emissions. Further, as show in Table 4.8-1, the project would not exceed the SCAQMD Tier 3 threshold of 3,000 $MTCO_2e/yr$. As such, the proposed project would be considered insignificant for GHG emissions.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

GHG PLAN CONSISTENCY

The project consists of roadway improvements to the Cannon Street and Serrano Avenue intersection; refer to Exhibit 2-3, *Conceptual Site Plan*. These improvements would address queuing deficiencies, improve roadway operations, and implement improvements consistent with the goals from within the City's General Plan. Further, pursuant to the City's Guidance for GHG Analysis, Table 4.8-2, *General Plan Climate Change-Related Policy Consistency Analysis*, details

the project's consistency with the climate change-related policies identified in the General Plan Natural Resources Element Table NR-1. Project construction would result in approximately 148 $MTCO_2eq$ and project operations would not generate additional GHG emissions. Further, the project would help reduce GHG emissions due to a decrease in vehicle idling time.

Table 4.8-2
General Plan Climate Change-Related Policy Consistency Analysis

Issue	Topic	Policies	Determination of Consistency
Transit	Systems along major corridors	**Circulation & Mobility Element** 1.1: Integrated, hierarchical, and multi-modal system of roadways, pedestrian walkways, and bicycle paths **Urban Design Element** 2.1: Active, pedestrian-friendly streets and corridors that balance auto, transit and pedestrian mobility	The proposed project would include a ten-foot paved multi-use sidewalk, intended for pedestrians, bicyclist, and equestrian uses. As such, the project would be consistent with the Circulation & Mobility Element Policy 1.1 and the Urban Design Element Policy 2.1.
	Non-motorized transportation	**Land Use Element** 2.6: Transit, bicycle, and pedestrian sidewalks, paths, paseos, and trail systems in and around mixed-use areas 2.7: High-quality architecture, landscape design, and site planning of mixed-use projects, emphasizing pedestrian orientation and safe and convenient access **Public Safety Element** 9.1: Traffic control devices, crosswalks, and pedestrian-oriented lighting, within design of streets, sidewalks, trails, and school routes 9.2: Safe routes that encourage children to walk or bike to schools and recreational facilities	As described above, the project would include a ten-foot paved multi-use sidewalk intended for pedestrian, bicyclist, and equestrian uses. Further, the project would alleviate bottlenecking that is occurring at the right turn lane from Cannon Street onto Serrano Avenue and insufficient right turn lane queuing capacity at the right turn lane from Serrano Avenue onto Cannon Street. Thus, the project would be consistent with the Land Use Element Policies 2.6 and 2.7, as well as the Public Safety Element Policies 9.1 and 9.2.
Transportation	Technical solutions	**Growth Management Element** 1.12: Traffic reduction strategies within the City's Transportation Demand Management Ordinance	The project's proposed second dedicated right turn lane on Cannon Street would increase the storage capacity of the intersection and the proposed widened right turn lane on Serrano Avenue would accommodate right turn movements that may otherwise be blocked by queued left turn movements (from westbound Serrano Avenue to southbound Cannon Street). As such, the project would be consistent with the Growth Management Element Policy 1.12.
	Roadway maintenance and design	**Circulation & Mobility Element** 1.3: Improve street capacity and increase safety on City arterials and neighborhood streets **Growth Management Element** 1.4: Transportation impact fees for improvements within the City and within established County Growth Management Areas 2.2: Maintain and expand roadway and bikeway systems **Infrastructure Element** 3.6: New developments funds fair-share costs associated with City provision of right-of-way maintenance services	As discussed above, the project would address bottlenecking that is occurring at the right turn lane from Cannon Street onto Serrano Avenue and accommodate right turn movements that may otherwise be blocked by queued left turn movements. The project would also include a 10-foot paved multiuse sidewalk that is intended for pedestrian, bicyclists, and equestrian uses. Additionally, the project is included as Project No. 20383 in the 2018-2019 City of Orange Budget and Capital Improvement Program (CIP). Thus, the project would be consistent with the Circulation & Mobility Element Policy 1.3, the Growth Management Element Policies 1.4 & 2.2, and the Infrastructure Element Policy 3.6.

Source: City of Orange, *City of Orange General Plan, Table NR-1, Climate Change Related Policies*, March 2010.

As seen in Table 4.8-2, the project would be consistent with the applicable issues and policies found within Table NR-1 of the Natural Resources Element. The project consists of intersection improvements that would provide improved circulation through the area to alleviate existing and forecast traffic congestion as part of the buildout of the General Plan. As shown, the project would be consistent with the applicable goals and policies found within the General Plan Circulation & Mobility Element, Growth Management Element, Infrastructure Element, Urban Design Element, Land Use Element, and lastly the Public Safety Element. Thus, a less than significant impact would occur in this regard.

CARB Scoping Plan

In December 2017, CARB approved the *California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target* (2017 Scoping Plan). This update focuses on implementation of a 40 percent reduction in GHGs by 2030 compared to 1990 levels. To achieve this, the 2017 Scoping Plan draws on a decade of successful programs that addresses the major sources of climate changing gases in every sector of the economy:

- *More Clean Cars and Trucks:* The plan sets out far-reaching programs to incentivize the sale of millions of zero-emission vehicles, drive the deployment of zero-emission trucks, and shift to a cleaner system of handling freight statewide.
- *Increased Renewable Energy:* California's electric utilities are ahead of schedule meeting the requirement that 33 percent of electricity come from renewable sources by 2020. The 2017 Scoping Plan guides utilities to 50 percent renewables, as required under SB 350.
- *Slashing Super-Pollutants:* The plan calls for a significant cut in super-pollutants such as methane and HFC refrigerants, which are responsible for as much as 40 percent of global warming.
- *Cleaner Industry and Electricity:* California's renewed cap-and-trade program extends the declining cap on emissions from utilities and industries and the carbon allowance auctions. The auctions would continue to fund investments in clean energy and efficiency, particularly in disadvantaged communities.
- *Cleaner Fuels:* The Low Carbon Fuel Standard drives further development of cleaner, renewable transportation fuels to replace fossil fuels.
- *Smart Community Planning:* Local communities would continue developing plans which would further link transportation and housing policies to create sustainable communities.
- *Improved Agriculture and Forests:* The 2017 Scoping Plan also outlines innovative programs to account for and reduce emissions from agriculture, as well as forests and other natural lands.

Achieving the 2030 target under the 2017 Scoping Plan continues to spur the transformation of the California economy and fix its course securely on achieving an 80 percent reduction in GHG emissions by 2050, consistent with the global consensus of the scale of reductions needed to stabilize atmospheric GHG concentrations at 450 ppm carbon dioxide equivalent and reduce the likelihood of catastrophic climate change.

The project includes roadway improvements to the Cannon Street and Serrano Avenue intersection. These improvements would address queuing deficiencies and improve roadway operations. As such, the project would not conflict with the broader goals listed in the 2017 Scoping Plan. The project would only have short-term GHG emissions from construction and

would not create operational GHG emissions. Thus, the project would not conflict with the objectives listed in the 2017 Scoping Plan. A less than significant impact would occur in this regard.

SCAG 2016 RTP/SCS

The SCAG) 2016 RTP/SCS), adopted April 7, 2016, is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. The 2016 RTP/SCS embodies a collective vision for the region's future and is developed with input from local governments, county transportation commissions, tribal governments, nonprofit organizations, businesses, and local stakeholders in Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties.

The 2016 RTP/SCS contains over 4,000 transportation projects, including highway improvements, railroad grade separations, bicycle lanes, new transit hubs, and replacement bridges. These future investments were included in county plans developed by the six-county transportation commissions and seek to reduce traffic bottlenecks, improve the efficiency of the region's network, and expand mobility choices. The 2016 RTP/SCS is an important planning document for the region, allowing project sponsors to qualify for federal funding. In addition, the 2016 RTP/SCS is supported by a combination of transportation and land use strategies that help the region achieve state GHG emission reduction goals and Federal Clean Air Act requirements, preserve open space areas, improve public health and roadway safety, support the vital goods movement industry, and use resources more efficiently.

The 2016 RTP/SCS establishes GHG emissions goals for automobiles and light-duty trucks for 2020 and 2035 and establishes an overall GHG target for the region consistent with both the statewide GHG-reduction targets for 2020 and the post-2020 statewide GHG reduction goals. The project improvements would address queuing deficiencies and improve roadway operations, which would reduce congestion and idling emission, and thus would reduce GHG emissions compared to the existing conditions. As such, the proposed project is consistent with the 2016 RTP/SCS goals to help achieve the state GHG emission reductions goals. Thus, a less than significant impact would occur in this regard.

CONCLUSION

As discussed above, the proposed project would not conflict with an adopted plan, policy, or regulation pertaining to GHGs. Also, the proposed project would result in minimal construction emissions, would not generate operational GHG emissions, and would decrease idling time at the intersection, which would reduce GHG emissions experienced at the project site. Thus, a less than significant impact would occur in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

4.9 HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?			✓	
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?			✓	
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				✓
d. Be located on a site which is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				✓
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?				✓
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?		✓		
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?			✓	

The information presented in this analysis is based on the *Phase I Environmental Site Assessment, Cannon Street Serrano Avenue Interchange Improvements, City of Orange, California* (Phase I ESA) prepared by Michael Baker International (dated April 17, 2020); refer to Appendix 8.4, *Phase I Environmental Site Assessment*.

Impact Analysis:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

The project would involve the widening of Cannon Street and Serrano Avenue to accommodate a second dedicated right-turn lane and widen the existing right turn lane, respectively. Nominal amounts of hazardous materials (e.g., paints, traffic striping materials, solvents, fuel) could be used during the short-term construction of the project. However, these materials are not anticipated to involve reportable quantities of hazardous materials. Long-term operation of the proposed roadway would not involve the transport, use, or disposal of hazardous materials. However, it is reasonable to assume that vehicles transporting hazardous materials to other destinations would utilize the proposed roadway. Nevertheless, impacts in this regard would not significantly increase compared to the existing condition with adherence to existing Federal and State standards, which would include:

- *Code of Federal Regulations* Title 49, Part 177, *Carriage by Public Highway*, which sets standards for acceptable types of hazardous materials that can be transported by vehicle, inspections, driver training, recordkeeping, and loading and unloading;

- *California Health and Safety Code* Division 20, Chapter 6.5, *Hazardous Waste Control*, which sets strict permitting requirements for hazardous waste haulers and establishes contingency measures in the event of upset; and

- Municipal Code Section 15.33.020, *Filing of a Hazardous Material Electronic Disclosure*, which requires a person who uses or handles a hazardous material to annually submit a completed electronic disclosure to the City of Orange Fire Department.

As such, no significant construction or operational impacts would result from the proposed project. Impacts in this regard would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

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?

Short-Term (Construction) Impacts

During the short-term period of project construction, there is a possibility of accidental release of hazardous substances such as petroleum-based fuels or hydraulic fluid used for construction equipment. The level of risk associated with the accidental release of hazardous substances is not considered significant due to the small volume and low concentration of hazardous materials utilized during construction. The construction contractor would be required to use standard construction controls and safety procedures that would avoid and minimize the potential for accidental release of such substances into the environment. Standard construction practices would be observed such that any materials released are appropriately contained and remediated as required by local, State, and Federal law.

The following analysis considers disturbance of potential existing hazardous materials on-site during construction.

Herbicide/Pesticide

Based on the Phase I ESA, past on-site uses associated with the project site included past on-site orchards. However, according to the Phase I ESA, the project area is highly disturbed and developed. As such, the proposed project would involve fill materials from past improvements. Thus, as concluded in the Phase I ESA, it is unlikely that elevated levels of residual herbicide/pesticide contamination from historical agricultural practices remain in on-site soils. Therefore, impacts in this regard are less than significant.

Aerially Deposited Lead

Aerially deposited lead (ADL) refers to lead deposited on highway shoulders from past leaded fuel vehicle emissions. According to Caltrans, although leaded fuel has been prohibited in California since the 1980's, ADL may still be present in soils adjacent to highways in use prior to that time.

Based on the Phase I ESA, past on-site uses associated with the project site include roadways and orchards. However, according to the Phase I ESA, Cannon Street and Serrano Avenue appear to have only been moderately traveled and were substantially widened by 1985. Thus, as concluded on the Phase I ESA, the potential for lead contamination to exist within soils along on-site roadways (Cannon Street and Serrano Avenue) due to ADL is unlikely, and impacts are not anticipated in this regard.

Lead-Based Paints

Lead based paints (LBPs) were commonly used in traffic striping materials before the discontinued use of lead chromate pigment in traffic striping/marking materials and hot-melt thermoplastic stripe materials (discontinued in 1997 and 2006, respectively). Although traffic striping is present along Cannon Street and Serrano Avenue, the Phase I ESA determined that Cannon Street and Serrano Avenue were last striped in 2015. Based on the age of the traffic striping materials, LBPs are unlikely to be present and no impacts are anticipated in this regard.

Cerro Villa Heights Disposal Station #7

The former Cerro Villa Heights Disposal Station #7 (landfill) is located approximately 1,164 feet northeast of the project site and is currently vacant. The landfill was a refuse disposal station, operated by the County of Orange from 1947 until 1957. Operations at the former landfill consisted of waste burning, as well as cut and cover activities.

Landfills have the potential to negatively impact soil, soil gas (i.e., methane produced as buried waste decomposes) and groundwater (i.e., contaminants leached to groundwater). Specifically, historical landfills constructed prior to 1990s are usually unlined, thus presenting a potential impact to groundwater. According to the Phase I ESA, landfill contaminants were detected below regulatory thresholds in soil and soil gas at the landfill site during subsurface investigations conducted between 1989 and 2002. No groundwater monitoring wells were installed due to the depth of groundwater, measured at approximately 350 feet below ground surface at the landfill site. The Santa Ana Regional Water Quality Control Board (RWQCB) issued a letter, dated May 20, 2002, stating future development at the landfill site would not impact water quality or the environment. The RWQCB closed the case on November 4, 2009. Given the distance between the former landfill and the project site (greater than 1,100 feet) as well as the depth to groundwater on-site (greater than 40 feet below ground surface), the Phase I ESA concluded that it is unlikely that this former off-site landfill site has resulted in elevated levels of contamination in on-site soil, soil gas, and/or groundwater. Thus, no impacts are anticipated in this regard.

Long-Term (Operational) Impacts

Refer to Response 4.9(a), above, for a description of impacts related to proposed operations at the project site. Operation of the proposed project would include transportation uses similar to the existing condition and would not introduce any new land uses that would require the use of hazardous materials. Operations of the proposed project would not increase impacts regarding

accidental conditions, compared to the existing condition. No impacts are anticipated in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

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

The project site is not located within one-quarter mile of an existing or proposed school. The closest school is Oakridge Private School, located at 19111 Villa Park Road, Orange, approximately 0.45-mile southwest of the project site. Therefore, no impact would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Government Code Section 65962.5 requires the Department of Toxic Substances Control (DTSC) and State Water Resources Control Board (SWRCB) to compile and update a regulatory sites listing (per the criteria of the Section). The California Department of Health Services is also required to compile and update, as appropriate, a list of all public drinking water wells that contain detectable levels of organic contaminants and that are subject to water analysis pursuant to Section 116395 of the Health and Safety Code. Section 65962.5 requires the local enforcement agency, as designated pursuant to Section 18051 of Title 14 of the California Code of Regulations, to compile, as appropriate, a list of all solid waste disposal facilities from which there is a known migration of hazardous waste.

Based on the Phase I ESA, the project site is not listed pursuant to Government Code Section 65962.5. No impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project

result in a safety hazard or excessive noise for people residing or working in the project area?

The project is not located within an airport land use plan and there are no public or private airports or airstrips within two miles of the project site. The nearest airport to the project site is John Wayne Airport/Orange County Airport, located at 3160 Airway Avenue, Costa Mesa, approximately ten miles to the southwest of the project site. Therefore, no impact would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

According to Figure PS-4, *Generalized Evacuation Corridors*, of the General Plan, the City does not identify Cannon Street or Serrano Avenue as Evacuation Corridors. According to the General Plan, the City maintains an emergency preparedness and emergency response procedures plan (*City of Orange Emergency Operations Plan* [Emergency Operations Plan]) in accordance with the State Office of Emergency Services guidelines for multi-hazard functional planning. The Emergency Operations Plan consists of: 1) a basic plan; 2) annexes which address specific functions and duties of response agencies; and 3) a directory of emergency response resources. The General Plan indicates the City of Orange Fire Department provides emergency medical and fire protection support, and the City of Orange Police Department is responsible for coordinating law enforcement and communications operations. Other City departments are referenced as supporting agencies or organizations.

Project construction is anticipated to occur for approximately six months in one phase. Construction traffic may have the potential to impact the local circulation system, thus affecting the Emergency Operations Plan. However, a temporary Traffic Control Plan (TCP) would be prepared and implemented as part of Mitigation Measure TR-1, which would minimize congestion and safety impacts during the construction process. The TCP would meet City of Orange traffic control guidelines, and would include potential measures such as construction signage, limitations on timing for lane closures to avoid peak hours, temporary striping plans, and the need for a construction flagperson to direct traffic during heavy equipment use, among others. The TCP would provide congestion relief during short-term construction activities and ensure safe travel, along existing travel routes. Thus, with implementation of Mitigation Measure TR-1, impacts would be less than significant.

Significance Determination: Potentially Significant Impact.

Mitigation Measures: Refer to Mitigation Measure TR-1.

Level of Significance After Mitigation: Less Than Significant Impact With Mitigation Incorporated.

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

According to the California Department of Forestry and Fire Protection, the project site is identified as a very high fire hazard severity zone.[1] However, the project would involve roadway improvements within existing right-of-way and would not construct any new habitable structures or facilities that could expose people or structure to significant risk of loss, injury or death involving wildland fires. Impacts in this regard would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

[1] California Department of Forestry and Fire Protection, *Very High Fire Hazard Severity Zones in LRA – Orange Map*, October 2011.

4.10 HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?			✓	
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			✓	
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
1) Result in substantial erosion or siltation on- or off-site?			✓	
2) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?			✓	
3) 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?			✓	
4) Impede or redirect flood flows?				✓
d In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				✓
e Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			✓	
f Result in the potential for discharge of stormwater to affect the beneficial uses of the receiving waters from construction activities or post-construction activities?			✓	
g Result in a potential for discharge of stormwater pollutants from areas of material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas, loading docks or other outdoor work areas?			✓	
h Create the potential for significant changes in the flow velocity or volume of stormwater runoff to cause environmental harm?			✓	

This section is based on the following hydrology and water quality documentation, provided by the Applicant (refer to Appendix 8.5, *Hydrology and Water Quality Reports*):

- Michael Baker International, *Hydrology and Hydraulic Technical Memorandum, Cannon Street & Serrano Avenue Intersection Improvement Plan* (Hydrology Report), dated June 29, 2020; and

- Michael Baker International, *Priority Water Quality Management Plan (WQMP) for Cannon Street a& Serrano Avenue Intersection Improvement* (WQMP), dated June 29, 2020.

Impact Analysis:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

As part of Section 402 of the Clean Water Act, the U.S. Environmental Protection Agency (EPA) has established regulations under the National Pollutant Discharge Elimination System (NPDES) program to control direct storm water discharges. In California, the State Water Resources Control Board (SWRCB) administers the NPDES permitting program and is responsible for developing NPDES permitting requirements. The NPDES program regulates industrial pollutant discharges, which include construction activities. The SWRCB works in coordination with the Regional Water Quality Control Boards (RWQCB) to preserve, protect, enhance, and restore water quality. The City of Orange is within the jurisdiction of the Santa Ana RWQCB.

CONSTRUCTION IMPACTS

The proposed project may result in water quality impacts during short-term construction activities. The grading/excavation required for project implementation would result in exposed soils that may be subject to wind and water erosion. Since the project's total area of disturbance during construction (approximately 0.3-acre) would be less than one acre in size, the proposed project would not be subject to the requirements of the Construction General Permit under the NPDES program. Short-term construction impacts would be minimal, as grading activities consist of a maximum of 3,500 cubic yards of cut and 600 cubic yards of fill with approximately 2,900 cubic yards of export.

Construction activities would be required to comply with Municipal Code Chapter 7.01, *Water Quality and Stormwater Discharges*. This chapter includes conditions and requirements related to the control of urban pollutants to stormwater runoff. Following conformance with applicable State and local standards and regulations including Municipal Code Chapter 7.01, impacts would be less than significant.

OPERATIONAL IMPACTS

Construction of the proposed project would not significantly alter the drainage conditions of the site. Runoff would continue to be collected via gutter along Cannon Street and flow into a catch basin further south on Cannon Street by Santiago Creek Trail. Runoff from Serrano Avenue would collect in the gutter and flow into the catch basin located on the northeast corner of the intersection of Cannon Street and Serrano Avenue, similar to existing conditions. Receiving waters include Santiago Creek, which is impaired by bacteria and pH. Potential pollutants from the project would include suspended solids/sediment, heavy metals, pathogens (bacteria, virus), oil and grease, toxic organic compounds, and trash and debris. The project would be required to comply with the requirements of the Santa Ana RWQCB Municipal Separate Storm Sewer Systems (MS4) Permit (Order No. R8-2009-0030 as amended by Order No. R8-2010-0062). In compliance with the MS4 Permit, the project Applicant has prepared a preliminary Water Quality Management Plan (WQMP); refer to Appendix 8.5. The WQMP includes non-structural BMPs, such as BMP maintenance, employee training, common area catch basin inspection, and street sweeping on private streets and parking lots; structural BMPs, such as providing storm drain stenciling and signage ("No Dumping-Drains to the Ocean"); and biotreatment BMPs (installation

of a Filterra unit upstream of the catch basin). The proposed Filterra unit would be able to treat the water quality flow from the entire drainage area up stream. Implementation of these BMPs would minimize project's operational impacts to water quality.

The proposed project includes roadway improvements and would not introduce a new land use that would result in a substantial change in water quality conditions at the site. The project does not include any structures or new uses that would generate water quality pollutants or cause a violation of water quality standards or waste discharge requirements. With implementation of the WQMP and compliance with Municipal Code Chapter 7.01, long-term impacts to water quality would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

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

The project site overlies the Orange County Groundwater Basin (Basin) and is currently largely covered with impervious surfaces. According to the California Department of Water Resources, the Basin is identified as a Medium priority basin.[1] The Orange County Water District (OCWD) manages the Basin through its *Groundwater Management Plan 2015 Update* (Groundwater Management Plan), which sets forth basin management goals and objectives and describes how the Basin is managed. The OCWD Groundwater Management Plan's goals are: 1) to protect and enhance the groundwater quality of the Orange County Groundwater Basin; 2) to protect and increase the sustainable yield of the basin in a cost-effective manner; and 3) to increase the efficiency of OCWD operations.

According to the Hydrology Report, the project would result in increase in impervious area ratio from 46.7 percent to 100 percent for improvements along Cannon Street, and from 43 percent to 75 percent for improvements along Serrano Avenue. According to the Hydrology Report, this decrease in pervious area would not result in a significant decrease in infiltration for the project area.

According to the WQMP, groundwater was not encountered during subsurface investigations of up to 31 feet below existing grade and is estimated to be deeper than 40 feet below existing ground surface. As the project does not involve the direct withdrawal of groundwater for municipal use and would not substantially interfere with recharge capabilities, implementation of the proposed improvements would not result in a noticeable deficit in aquifer volume or a lowering of the groundwater table. Thus, the proposed project would not interfere with implementation of OCWD's Groundwater Management Plan. Impacts would be less than significant in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

[1] California Department of Water Resources, *SGMA Basin Prioritization Dashboard*, https://gis.water.ca.gov/app/bp-dashboard/final/, accessed December 23, 2019.

Level of Significance After Mitigation: Less Than Significant Impact.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

(1) Result in substantial erosion or siltation on- or off-site?

CONSTRUCTION IMPACTS

Soil disturbance would temporarily occur during project construction due to earth-moving activities such as excavation and trenching for utilities, soil compaction and moving, and grading. Disturbed soils would be susceptible to high rates of erosion from wind and rain, resulting in sediment transport via stormwater runoff from the project site. As discussed, the project would be subject to compliance with the requirements set forth in Municipal Code Chapter 7.01, which includes conditions and requirements established by the City related to the control of urban pollutants to stormwater runoff. Compliance with Municipal Code Chapter 7.01 would ensure project construction does not result in substantial erosion or siltation on- or off-site.

OPERATIONAL IMPACTS

As discussed in Response 4.10(a), nominal changes to post-development drainage conditions would result and no impacts to the sizing of the existing catch basin would result. Increased storm flows due to the increased impervious surfaces would be less 0.01 cubic foot per second (cfs). According to the WQMP, this increase of flow would exceed five percent of the existing condition, meaning there is also a volume increase by more than 5 percent. However, per Section 5.3.1 of the *Orange County Technical Guidance Document* (TGD), a further downstream point of compliance can be used to evaluate whether the project would adversely impact the downstream erosion, sedimentation, or stream habitat. As concluded on the WQMP, the project's hydrological impacts to the Santiago Creek Reach 1, located approximately 0.5 mile away, would be insignificant.

With compliance with the WQMP, including non-structural BMPs and biotreatment BMPs (installation of a Filterra unit upstream of the catch basin), the project would minimize increases in erosion or siltation to the storm drain system and impacts in this regard would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

(2) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

As stated in Responses 4.10(c)(1), the project would result in less than 0.1 cfs increase to total peak runoff flow rate, meaning there is also a volume increase by more than 5 percent compared to existing conditions. However, as concluded on the WQMP, the project's hydrological impacts would be insignificant. Further, according to the Hydrology Report, the project site is located

outside of the 100-year flood hazard area. Less than significant impacts would occur in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

(3) 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?

Refer to Response 4.10(a).

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

(4) Impede or redirect flood flows?

According to the Hydrology Report, the project site is located outside of the 100-year flood hazard area. No impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

FLOOD HAZARD

Refer to Response 4.10(c)(4). No impact would result in this regard.

TSUNAMI

A tsunami is a great sea wave, commonly referred to as a tidal wave, produced by a significant undersea disturbance such as tectonic displacement of a sea floor associated with large, shallow earthquakes. The project site is located over 16 miles inland from the Pacific Ocean and is located at a sufficient distance so as not to be subject to tsunami impacts. No impacts would occur in this regard.

SEICHE

A seiche is an oscillation of a body of water in an enclosed or semi-enclosed basin, such as a reservoir, harbor, lake, or storage tank. The project site is located less than one mile northeast of the Santiago Creek Recharge Basin and over three miles southwest of the Walnut Canyon

Reservoir in the City of Anaheim. According to the General Plan PEIR, although seiches have not historically occurred in the City, a seiche could occur within the Santiago Creek Recharge Basin. The project site is located upslope of the Santiago Creek Recharge Basin and is located at sufficient distance such that the proposed improvements would not be at risk to seiche. As a result, project implementation would not risk release of pollutants due to project inundation.

According to the City of Anaheim General Plan EIR, there is a low to moderate potential for flooding due to seiche hazards affecting properties adjacent to the Walnut Canyon Reservoir.[2] As the proposed project is located over three miles from the Walnut Creek Reservoir, no impacts are anticipated to occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Refer to Response 4.10(b) regarding the project's potential to conflict with or obstruct implementation of OCWD's Groundwater Management Plan. As discussed, the project site is located within the Santa Ana RWQCB. The Santa Ana RWQCB manages surface waters through implementation of its *Water Quality Control Plan for the Santa Ana River Basin* (Basin Plan). Chapter 2, *Plans and Policies*, includes a number of water quality control plans and policies adopted by the SWRCB that apply to the Santa Ana RWQCB. Chapter 4, *Water Quality Objectives*, of the Basin Plan includes specific water quality objectives according to waterbody type (i.e., ocean waters, enclosed bays and estuaries, inland surface waters, and groundwaters. As concluded under Responses 4.10(a) and 4.10(b), the project would result in less than significant impacts to surface water quality and groundwater quality following conformance with Municipal Code Chapter 7.01 and implementation of BMPs. Less than significant impacts would occur in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

f) Result in the potential for discharge of stormwater to affect the beneficial uses of the receiving waters from construction activities or post-construction activities?

According to the WQMP, downstream receiving waters for the project site are the Santiago Creek Reach 1 and the Santa Ana River Reach 1. According to the SWQCB, common beneficial use for the Santiago Creek Reach 1 include swimming, while common beneficial uses for the Santa Ana River Reach 1 include secondary contact, swimming, and aquatic life support.[3] As stated in

[2] The Planning Center, *Anaheim General Plan/Zoning Code Update Environmental Impact Report*, page 5-132, May 2004.

[3] State Water Quality Control Board, *Final 2014 and 2016 Integrated Report (CWA Section 303(d) List / 305(b) Report)*, Categories 1 and 2,

Response 4.10(a), the project would be required to comply with the WQMP, which include BMPs that would minimize water quality of runoff through the project area during operations. Further, with compliance with Municipal Code Chapter 7.01, related to the control of urban pollutants to stormwater runoff, construction impacts would be reduced to less than significant levels as well. With implementation of the WQMP and compliance with Municipal Code Chapter 7.01, impacts to the beneficial uses of the receiving waters would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

g) Result in a potential for discharge of stormwater pollutants from areas of material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas, loading docks or other outdoor work areas?

Short-term construction staging during project construction would have a potential to result in discharge of stormwater pollutants from areas of material storage; however, as stated in Response 4.10(a), these short-term construction impacts would be nominal. As a roadway project, project operation would not have adverse impacts in this regard. As such, less than significant impacts would occur in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

h) Create the potential for significant changes in the flow velocity or volume of stormwater runoff to cause environmental harm?

Refer to Responses 4.10(c)(1) and 4.10(c)(2). As stated in Responses 4.10(c)(1), the project would result in less than 0.1 cfs increase to total peak runoff flow rate, meaning there is also a volume increase by more than 5 percent compared to existing conditions. However, as concluded on the WQMP, the project's hydrological impacts would be insignificant and, as a result, would not cause environmental harm. As such, the project would result in less than significant impacts in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml?wbid=CAR801110001 9991014112418, October 3, 2017.

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4.11 LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Physically divide an established community?				✓
b. Cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?			✓	

Impact Analysis:

a) Physically divide an established community?

The project site is located at the intersection of Cannon Street and Serrano Avenue, which are existing roadway facilities. The proposed roadway improvements, utilities relocation, and minor ornamental landscaping removal would not have the potential to create a barrier between developed uses adjacent to Cannon Street and Serrano Avenue since the roadways already exist and all improvements would occur within existing rights-of-way. Therefore, the project would not divide an established community and no impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Significance Determination After Mitigation: No Impact.

b) Conflict with applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

CITY OF ORANGE

According to the General Plan Circulation and Mobility Element, the City designates Cannon Street as a "Major Arterial" (six lanes divided) and Serrano Avenue as a "Primary Arterial" (four lanes divided). The project site, the Cannon Street and Serrano Avenue intersection, is specifically identified as a Critical Intersection within the City, which allows deviation from typical City design standards. Refer to Exhibit 2-3, *Conceptual Site Plan*, Exhibit 2-4, *Cannon Street – Conceptual Section*, and Exhibit 2-5, *Serrano Avenue – Conceptual Section*, for a depiction of proposed design of the interchange.

Critical Intersection Program

Intersections serve as traffic control points for the circulation system, regulating the flow of vehicles along City streets and sometimes limiting the capacity of the system. In the long term, system capacity and efficiency can both be increased if intersections are designed to handle future anticipated traffic volumes. Typically, the design of the roadways forming an intersection

dictates the intersection configuration. City of Orange Department of Public Works standards indicate that a left-turn pocket may or may not be provided, depending on traffic volumes through the intersection. However, one pocket may not be adequate to handle vehicles during peak hours. Traffic may back up into a through travel lane, resulting in congestion at the intersection and at other locations along the roadway.

One way of providing additional intersection capacity at critical locations is through the use of special intersection configurations known as "critical intersections." Critical intersections deviate from typical City design standards by increasing the number of lanes at an intersection beyond what typically would be required. By increasing capacity at the intersection, the circulation link increases overall system capacity.

The General Plan Circulation and Mobility Element Figure CM-2, *Master Plan of Streets and Highways*, identifies the project site (Cannon Street and Serrano Avenue) as a critical intersection. As the intersection of Cannon Street and Serrano Avenue is identified as a critical intersection, the proposed intersection improvements would be consistent with the intent of the General Plan.

Class I Off Street Bikeway

The General Plan Circulation and Mobility Element Figure CM-3, *Plan for Recreational Trails and Bikeways*, identifies an existing Class I (Off Street) Bikeway along Cannon Street and a future Class I (Off Street) Bikeway for Serrano Avenue. Currently sidewalk and a separated equestrian path are present to the east of Cannon Street. The equestrian path is currently separated from the roadway via a landscaped area. Implementation of the proposed project would replace the existing sidewalk, landscaping, and equestrian trail with a combined paved 10-foot multi-purpose sidewalk; refer to Exhibit 2-4. A three-foot high wooden fence is proposed between Cannon Street and the proposed path. The fence would include wooden posts and railings. The General Plan Circulation and Mobility Element Figure CM-5, *Bikeway Standards*, identifies requirements for a Class I (Off Street) Bikeway, which includes an 8- to 12-foot bike path width, with a minimum of 2 feet on each side of the path. Bike paths closer than five feet from the edge of pavement must include a barrier. As the project proposes a 10-foot paved path, with a wooden fence dividing the path from the roadway, and a total of 10.5 feet right-of-way from the curb to edge of right-of-way, the proposed project would comply with the Class I (Off Street) Bikeway standards; refer to Exhibit 2-4. Impacts in this regard would be less than significant.

Existing right-of-way along Serrano Avenue can accommodate a future Class I (Off Street) Bikeway. Implementation of the proposed widening along Serrano Avenue would reduce available existing right-of-way for installation of a future bikeway (allowing approximately 0.9 to 7.0 feet from curb to edge of right-of-way); refer to Exhibit 2-5. To install a Class I (Off Street) Bikeway, a minimum of 12 feet would be required. Notwithstanding, the property along Serrano Avenue to the north of the project is owned by the City of Orange. As such, the property would be available to the City to accommodate a future Class I (Off Street) Bikeway north of Serrano Avenue. Impacts in this regard would be less than significant.

Conclusion

The proposed intersection improvements would not result in the implementation of any new land uses. Additionally, it would not require a change in land use designations or zoning for any existing uses. Further, the proposed project would be consistent with the General Plan Circulation and Mobility Element. As such, impacts in this regard would be less than significant.

CITY OF VILLA PARK

Although the project site is entirely within the City of Orange, the site also abuts the City of Villa Park's jurisdictional boundary, which begins west of the Cannon Street right-of-way. The Villa Park General Plan Circulation Element designates Cannon Street as a "Major Arterial." As stated above, the proposed intersection improvements would not result in the implementation of any new land uses and would not require a change in land use designations or zoning for any existing uses. Further, the proposed roadway improvements would not impact any existing uses within the City of Villa Park's jurisdiction.

Overall, the project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project and impacts would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Significance Determination After Mitigation: Less Than Significant Impact.

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4.12 MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?				✓
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?				✓

Impact Analysis:

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?

The proposed project would involve roadway improvements along Cannon Street and Serrano Avenue. According to California Department of Conservation, the project site is identified as Mineral Resource Zone 3 (MRZ-3).[1] MRZ-3 is defined as areas containing mineral deposits the significance of which cannot be evaluated from available data. Although the project site is classified as such, no mineral recovery activities currently occur in the project area and implementation of the roadway improvement would have no impact on the potential for future mining activities in the project area. Thus, no impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

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?

The project site is not delineated as a locally-important mineral resource recovery site on a local general plan, specific plan, or other land use plan.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

[1] California Division of Mines and Geology, *Mineral Land Classification of the Greater Los Angeles Area*, 1981.

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4.13 NOISE

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?		✓		
b. Generation of excessive groundborne vibration or groundborne noise levels?			✓	
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?				✓

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air, and is characterized by both its amplitude and frequency (or pitch). The human ear does not hear all frequencies equally. In particular, the ear de-emphasizes low and very high frequencies. To better approximate the sensitivity of human hearing, the A-weighted decibel scale (dBA) has been developed. On this scale, the human range of hearing extends from approximately three dBA to around 140 dBA.

Noise is generally defined as unwanted or excessive sound, which can vary in intensity by over one million times within the range of human hearing; therefore, a logarithmic scale, known as the decibel scale (dB), is used to quantify sound intensity. Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks, and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Noise generated by mobile sources typically attenuates (is reduced) at a rate between three dBA and 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. Hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of three dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance. Noise generated by stationary sources typically attenuates at a rate between 6 dBA and about 7.5 dBA per doubling of distance.

There are a number of metrics used to characterize community noise exposure, which fluctuate constantly over time. One such metric, the equivalent sound level (L_{eq}), represents a constant sound that, over the specified period, has the same sound energy as the time-varying sound. Noise exposure over a longer period of time is often evaluated based on the Day-Night Sound Level (L_{dn}). This is a measure of 24-hour noise levels that incorporates a 10-dBA penalty for sounds occurring between 10:00 p.m. and 7:00 a.m. The penalty is intended to reflect the increased human sensitivity to noises occurring during nighttime hours, particularly at times when people are sleeping and there are lower ambient noise conditions. Typical L_{dn} noise levels for light and medium density residential areas range from 55 dBA to 65 dBA.

REGULATORY FRAMEWORK

City of Orange

City of Orange General Plan

The *City of Orange General Plan* (General Plan) Noise Element provides guidance for the control of noise to protect residents, workers, and visitors from potentially adverse noise impacts. Its primary goal is to regulate the long-term noise impacts to preserve acceptable noise environments for all types of land uses. This element defers regulation of temporary, point-source noises (i.e., construction activities) to the City's Noise Ordinance. With regard to long-term noise impacts, the Noise Element includes the following goals, policies that would be applicable to the project:

Goal 1.0 Promote a pattern of land uses compatible with current and future noise levels.

Policy 1.1 Consider potential excessive noise levels when making land use planning decisions.

Policy 1.2 Encourage new development projects to provide sufficient spatial buffers to separate excessive noise generating land uses and noise-sensitive land uses.

Policy 1.4 Ensure that acceptable noise levels are maintained near noise-sensitive areas.

Policy 1.6 Require an acoustical study for proposed developments in areas where the existing and projected noise level exceeds or would exceed the maximum allowable levels identified in Table N-3. The acoustical study shall be performed in accordance with the requirements set forth within this Noise Element.

Goal 2.0 Minimize vehicular traffic noise in residential areas and near noise-sensitive land uses.

Policy 2.2 Encourage coordinated site planning and traffic control measures that minimize traffic noise in noise-sensitive land use areas.

Policy 2.5 Work toward understanding and reducing traffic noise in residential neighborhoods with a focus on analyzing the effects of traffic noise exposure throughout the City.

Goal 7.0 Minimize construction, maintenance vehicle, and nuisance noise in residential areas and near noise-sensitive land uses.

Policy 7.1 Schedule City maintenance and construction projects so that they generate noise during less sensitive hours.

Policy 7.2 Require developers and contractors to employ noise minimizing techniques during construction and maintenance operations.

Policy 7.3 Limit the hours of construction and maintenance operations located adjacent to noise-sensitive land uses.

The Noise Element utilizes an adopted noise and land use compatibility matrix based on the State's compatibility guidelines and modified to reflect City standards for residential and other areas.

Orange Municipal Code

Chapter 8.24 of the *Orange Municipal Code* (Municipal Code) contains noise control regulations that would have a limited application to the project's construction noise impacts, as the Municipal Code exempts construction activities from the chapter's provisions during daytime hours when these activities would occur. Noise associated with maintenance activities (e.g., landscaping, cleaning, minor repair work) would similarly be exempt during daytime hours. Noises from transportation sources traveling on roadways would be subject to the General Plan Noise Element.

> *8.24.050 – Exemptions from Chapter Provisions*
>
> *The following activities shall be exempted from the provisions of this chapter:*
>
> *E. Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities take place between the hours of 7:00 a.m. and 8:00 p.m. on any day except for Sunday or a Federal holiday, or between the hours of 9:00 a.m. and 8:00 p.m. on Sunday or a Federal holiday. Noise generated outside of the hours specified are subject to the noise standards identified in Table 8.24.040.*
>
> *I. Noise sources associated with the maintenance of real property, provided such activities take place between the hours of 7:00 a.m. and 8:00 p.m. on any day except Sunday or a Federal holiday, or between the hours of 9:00 a.m. and 8:00 p.m. on Sunday or a Federal holiday. Operation of leaf blowers are regulated under Municipal Code Chapter 8.26.*
>
> *L. Mobile noise sources including but not limited to operational noise from trains, or automobiles or trucks traveling on roadways. Transportation noise as related to noise/land use compatibility is subject to the City's General Plan Noise Element.*

As referenced by Section 8.24.050(E) above, construction activities occurring outside of the provided hours would be regulated by the standards identified in Table 8.24.040 of the Municipal Code as presented below in Table 4.13-1, *City of Orange Exterior Noise Standards*.

Table 4.13-1
City of Orange Exterior Noise Standards

Type	Noise Level	Time Period
Hourly Average	55 dBA	7:00 a.m. – 10:00 p.m.
	50 dBA	10:00 p.m. – 7:00 a.m.
Maximum Level	70 dBA	7:00 a.m. – 10:00 p.m.
	65 dBA	10:00 p.m. – 7:00 a.m.

Notes: dB(A) = A-weighted decibels
Source: City of Orange, *Orange Municipal Code*, Section 8.24.040, *Exterior Standards*.

City of Villa Park

City of Villa Park General Plan

The *City of Villa Park General Plan Noise Element* (Villa Park Noise Element) provides information on current and future noise levels in the City of Villa Park and provide the basis for the creation and enforcement of noise-associated standards and codes. These actions protect the health and wellbeing of persons living and working in Villa Park. With regard to noise impacts, the Villa Park Noise Element includes the following goals, policies that would be applicable to the project:

Goal 1 Continue to provide acceptable noise environments for residential land use.

Policy N1 Continue to apply noise considerations into the community planning process to prevent noise/land use conflicts

Policy N2 Minimize through traffic in residential areas by promoting peripheral routing.

Policy N3 Promote, where appropriate, sound attenuation measures. These may include the use of berms and wall barriers, the placement of buildings away from the noise source, or a combination of sound attenuation measures.

Villa Park Municipal Code

Chapter VI – Public Nuisances, Article 6-6 Noise Control, of the *Villa Park Municipal Code* (Villa Park Noise Ordinance) was adopted to control unnecessary, excessive and annoying noises emanating from incorporated areas of the City of Villa Park. The following Villa Park Noise Ordinance section would be applicable to the project:

Sec. 6-6.7. – Special Provisions – Generally.

The following activities shall be exempted from the provisions of this section.

e. Noise sources associated with construction, repair, remodeling, or grading of any real property provided said activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, or 8:00 p.m. and 8:00 a.m. on Saturday, or at any time on Sunday or a Federal holiday.

EXISTING CONDITIONS

Stationary Sources

The project area is located within an urbanized area. The primary sources of stationary noise in the project vicinity are urban-related activities (i.e., mechanical equipment, and pedestrians). The noise associated with these sources may represent a single-event noise occurrence, short-term, or long-term/continuous noise.

Mobile Sources

The majority of the existing noise in the project area is generated from traffic along Cannon Street and Serrano Avenue. According to the Noise Element, the project site lies within the 65 dBA CNEL traffic noise contour.

Noise Measurements

In order to quantify existing ambient noise levels in the project area (vicinity of the project site), four noise measurements were taken on September 23, 2019; refer to Table 4.13-2, *Noise Measurements*. The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the project site. Three ten-minute measurements were taken between 2:15 p.m. and 2:55 p.m. Short-term (L_{eq}) measurements are considered representative of the noise levels throughout the day.

Table 4.13-2
Noise Measurements

Site No.	Location	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Peak (dBA)	Time
1	East of the residence located at 1878 North Carlsbad Street, within the grassy area adjacent to the sidewalk.	46.5	41.6	63.8	82.6	2:15 p.m.
2	Along Serrano Avenue, approximately 248 feet east of the Cannon Street and Serrano Avenue intersection.	66.1	47.4	82.5	101.9	2:40 p.m.
3	Along Cannon Street, approximately 122 feet south of the Cannon Street and Serrano Avenue intersection.	71.5	52.7	88.3	102.6	2:55 p.m.

Notes: dBA = A-weighted decibels, L_{eq} = equivalent continuous sound levels. L_{min}= minimum sound levels, L_{max}= maximum sound levels, peak= peak sound levels

Source: Michael Baker International, September 23, 2019.

- Measurement Site 1 was located east of the residence located at 1878 North Carlsbad Street, within the grassy area adjacent to the sidewalk. Sources of peak noise included traffic and motorcycles along Cannon Street and Serrano Avenue. The noise level monitored at Site 1 was 46.5 dBA L_{eq}.

- Measurement Site 2 was located along Serrano Avenue, approximately 248 feet east of the Cannon Street and Serrano Avenue intersection. Source of peak noise included street traffic on Serrano Avenue. The noise level monitored at Site 2 was 66.1 dBA L_{eq}.

- Measurement Site 3 was located along Cannon Street, approximately 122 feet south of the Cannon Street and Serrano Avenue intersection. Sources of peak noise included street traffic on Cannon Avenue, and a loud car stereo playing. The noise level monitored at Site 3 was 7138 dBA L_{eq}.

Meteorological conditions were clear skies, warm temperatures, with light wind speeds (0 to 5 miles per hour), and low humidity. Noise monitoring equipment used for the ambient noise survey consisted of a Brüel & Kjær Hand-held Analyzer Type 2250 equipped with a Type 4189 pre-polarized microphone. The monitoring equipment complies with applicable requirements of the American National Standards Institute (ANSI) for sound level meters. The results of the field measurements are included in Appendix 8.6, *Noise Data*.

Sensitive Receptors

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses. The nearest sensitive receptors to the project site include residential uses adjacent to the east and south of the proposed construction boundary. Furthermore, there are sensitive receptors within the City of Villa Park approximately 80 feet to the west of the proposed construction boundary.

Impact Analysis:

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?

It is difficult to specify noise levels that are generally acceptable to everyone; noise that is considered a nuisance to one person may be unnoticed by another. Standards may be based on documented complaints in response to documented noise levels, or based on studies of the ability of people to sleep, talk, or work under various noise conditions.

CONSTRUCTION IMPACTS

Construction of the proposed project would occur over approximately six months and would include demolition, grading, and paving. All of the project construction would occur within the City of Orange. Groundborne noise and other types of construction-related noise impacts would typically occur during the initial construction phases. These phases of construction have the potential to create the highest levels of noise. Typical noise levels generated by construction equipment are shown in Table 4.13-3, *Maximum Noise Levels Generated by Typical Construction Equipment*. It should be noted that the noise levels identified in Table 4.13-3 are maximum sound levels (L_{max}), which are the highest individual sound occurring at an individual time period.

Table 4.13-3
Maximum Noise Levels Generated by Typical Construction Equipment

Type of Equipment	Acoustical Use Factor[1]	L_{max} at 50 Feet (dBA)
Concrete Saw	20	90
Crane	16	81
Concrete Mixer Truck	40	79
Backhoe	40	78
Dozer	40	82
Excavator	40	81
Forklift	40	78
Paver	50	77
Pile Driver (impact)	20	101
Pile Driver (sonic)	20	96

Table 4.13-3 (continued)
Maximum Noise Levels Generated by Typical Construction Equipment

Type of Equipment	Acoustical Use Factor[1]	L_{max} at 50 Feet (dBA)
Roller	20	80
Tractor	40	84
Water Truck	40	80
Grader	40	85
General Industrial Equipment	50	85

Note: L_{max} = maximum sound levels, dBA= A-weighted decibel's

1 Acoustical use factor (percent): Estimates the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

Source: Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054),* dated January 2006.

Pursuant to Municipal Code Section 8.24.050, *Exemptions from Chapter Provisions*, project construction would be limited to 7:00 a.m. and 8:00 p.m. on any day except for Sundays or Federal holidays, or between the hours of 9:00 a.m. and 8:00 p.m. on Sundays or Federal holidays. All construction activities would be required to comply with the City's General Plan Goal 7.0, Municipal Code Chapter 8.24, and applicable State and Federal regulations. Further, the project would. It should be noted that the noise levels depicted in Table 4.13-3 are maximum noise levels, which would occur sporadically when construction equipment is operated in proximity to sensitive receptors. To reduce the potential for construction-related noise impacts to sensitive receptors, Mitigation Measure NOI-1 would be implemented to incorporate best management practices during construction. Construction equipment would be required to be equipped with properly operating and maintained mufflers and other State-required noise attenuation devices. As such, given the sporadic and variable nature of proposed project construction, implementation of noise limits specified in the Municipal Code, and best management practices imposed by Mitigation Measure NOI-1, noise impacts during short-term construction would be reduced to less than significant levels.

OPERATIONAL IMPACTS

Mobile Noise

An off-site traffic noise impact occurs when there is a discernible increase in traffic noise and the resulting noise level exceeds an established noise standard. In community noise considerations, changes in noise levels greater than 3 dBA are often identified as substantial, while changes less than 1 dBA would not be discernible to local residents. In the range of 1 to 3 dB, residents who are very sensitive to noise may perceive a slight change. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dBA. This is based on a direct immediate comparison of two sound levels. In a community noise situation, however, noise exposures are over a long period of time and changes in noise levels occur over years (rather than the immediate comparison made in a laboratory situation). Therefore, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dBA, and 3 dBA is the most commonly accepted discernible difference. A 5 dBA change is generally recognized as a clearly discernible difference. According to the 2013 California Department of Transportation (Caltrans) *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, doubling of traffic on a roadway would result in an increase of 3 dB (a barely perceptible increase).

The proposed project would not result in an increase of traffic. Intersection improvements do not directly generate vehicle trips; rather, vehicle trips are generated by land use changes that may be indirectly influenced by transportation improvements. The proposed project would not result in increases in the rate of vehicle trips. Rather, the proposed intersection improvements would provide improved circulation through the area to alleviate existing and forecast traffic congestion as part of the buildout of the General Plan. Although the project would result in automobiles located slightly closer to sensitive receptors to the east of the project site, an existing 8-foot wall would reduce any mobile noise at these locations by approximately 8 dBA.[1] Therefore, the project would not result in a significant off-site traffic noise impact and no mitigation measures are required. Impacts in this regard are less than significant.

Stationary Noise Impacts

As an intersection improvement project, no new stationary noise sources would result. Therefore, no impacts would occur in this regard.

Significance Determination: Potentially Significant Impact.

Mitigation Measures:

NOI-1 Prior to the issuance of a grading permit, the City of Orange Public Works Department shall demonstrate that the project complies with the following:

- Construction contracts specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other State-required noise attenuation devices.
- Construction haul routes shall be designed to avoid noise sensitive uses (e.g., residences, convalescent homes, etc.), to the extent feasible.
- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.
- Construction activities shall not take place outside of the allowable hours specified by the City of Orange Municipal Code Section 8.24.050 (7:00 a.m. and 8:00 p.m. on any day except for Sundays or Federal holidays, or between the hours of 9:00 a.m. and 8:00 p.m. on Sundays or Federal holidays). Noise generated outside of the hours specified are subject to the noise standards identified in Municipal Code Section 8.24.040.

During project construction, the Public Works Director shall be the responsible party to ensure that the construction contractor complies with the aforementioned measures.

Level of Significance After Mitigation: Less Than Significant Impact With Mitigation Incorporated.

[1] Federal Highway Administration, *Roadway Construction Noise Model User's Guide, Appendix A*, January 2006.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Project construction can generate varying degrees of groundborne 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 the 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. Groundborne vibrations from construction activities rarely reach levels that damage structures.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.20 inch/second) appears to be conservative. The types of construction vibration impact 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. Typical vibration produced by construction equipment is included in Table 4.13-4, *Typical Vibration Levels for Construction Equipment*.

Table 4.13-4
Typical Vibration Levels for Construction Equipment

Equipment	Approximate peak particle velocity at 25 feet (inches/second)	Approximate peak particle velocity at 40 feet (inches/second)
Large bulldozer	0.089	0.031
Loaded trucks	0.076	0.027
Small bulldozer	0.003	0.001
Vibratory Roller	0.210	0.104
Jackhammer	0.035	0.012

Notes:
1. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, Table 12-2, September 2018.
2. Calculated using the following formula:
$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$
where: PPV (equip) = the peak particle velocity in inch per second of the equipment adjusted for the distance
PPV (ref) = the reference vibration level in inch per second from Table 12-2 of the FTA *Transit Noise and Vibration Impact Assessment Guidelines*
D = the distance from the equipment to the receiver

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

Ground-borne vibration decreases rapidly with distance. As indicated in Table 4.13-4, based on the FTA data, vibration velocities from typical heavy construction equipment operation that would be used during project construction range from 0.003 to 0.210 inch/second peak particle velocity (PPV) at 25 feet from the source of activity. The nearest structure (a residential home) is located approximately 40 feet east of the project site boundary along Cannon Street. The highest amount of ground-borne vibration would be generated during paving activities on-site (use of a vibratory roller). As noted in Table 4.13-4, vibration at 40 feet would range from 0.001 to 0.104 PPV. Therefore, vibration from construction activities experienced at the closest structure would be below the 0.20 inch-per-second PPV significance threshold. Therefore, vibration impacts would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

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?

The nearest airport to the project site is the John Wayne Airport located approximately ten miles to the south. The proposed project is not located within an airport land use plan. Furthermore, the project is an intersection improvement that would not include the construction of new buildings. Therefore, project implementation would not expose people residing or working in the project area to excessive noise levels associated with aircraft. The project site is not located within the vicinity of a private airstrip or related facilities. Therefore, no impacts would occur in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

4.14 POPULATION AND HOUSING

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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)?				✓
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				✓

Impact Analysis:

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)?

The project would involve traffic and circulation improvements at the intersection of Cannon Street and Serrano Avenue and would not involve the construction of any homes, businesses, or other uses that would result in direct population growth. While the proposed roadway improvements would improve traffic efficiency and safety in the project area, they would not increase the roadway capacity of the intersection. The project also would not represent the removal of a barrier to growth or extension of roads and infrastructure since roadway facilities already exist throughout the project area. As such, no impacts in regard to population growth in the area would occur as a result of the project.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

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

Development of the project would be within the existing right-of-way of Cannon Street and Serrano Avenue. As such, development of the project would not displace any housing or residents. No impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

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4.15 PUBLIC SERVICES

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
1) Fire protection?				✓
2) Police protection?				✓
3) Schools?				✓
4) Parks?				✓
5) Other public facilities?				✓

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

1) Fire protection?

The City of Orange Fire Department provides fire and emergency services to the City, including the project site. The nearest City of Orange Fire station is Station #8, located at 5725 Carver Lane, approximately 0.5-mile northeast of the project site. The proposed roadway improvements would not substantially increase the need for fire protection services. No habitable structures are proposed. Moreover, the project would improve traffic efficiency and safety in the project area. As a result, the project would involve beneficial impacts related to emergency response through the intersection. No impact would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

2) Police protection?

The City of Orange Police Department provides police protection services within the City. The Orange Police Department is located at 1107 North Batavia Street, approximately 3.84 miles southwest of the project site. The proposed roadway improvements would not substantially increase the need for police protection services. No habitable structures are proposed. Moreover, the project would improve traffic efficiency and safety in the project area. As a result,

the project would involve beneficial impacts related to emergency response through the intersection. No impact would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

3) Schools?

The proposed project would not directly result in any student generation, as no homes or other growth inducing uses are proposed. Implementation of the proposed project would not result in the need for the construction of additional school facilities, as the project would not result in an increase in population; refer to Section 4.14, *Population and Housing*. Therefore, no impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

4) Parks?

The proposed roadway improvements would not generate the need for new or physically altered park facilities. No habitable structures are proposed as part of the project, nor would the project result in any growth inducement. Moreover, as discussed in Response 4.14(a), the project would not directly or indirectly induce population growth in the area. Thus, no impacts are anticipated in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

5) Other public facilities?

As shown above in Responses 4.15(a)(1) through 4.15(a)(4), the proposed project would not result in significant impacts on public services or facilities. No other public facilities are anticipated to be affected by the project. No impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: No impact.

4.16 RECREATION

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				✓
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?				✓

Impact Analysis:

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?

As stated in Response 4.15(a)(4), the proposed project would not result in increased demands on existing parks or other recreational facilities and would not result in the physical deterioration of these facilities. Therefore, no impacts would occur.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

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

As stated in Response 4.15(a)(4), the proposed project would not result in increased demands on parks or other recreational facilities and would not result in adverse physical effects on the environment. No recreational facilities would be constructed as part of the project. As such, no impacts would occur.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

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4.17 TRANSPORTATION

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

This section is based upon traffic data collected by Transportation Studies, Inc. on January 18, 2017; refer to Appendix 8.7, *Traffic Data*.

Impact Analysis:

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

Roadway Facilities

State and Federal laws require the correlation of Land Use Element building intensities in General Plan with the Circulation Element capacity. A Traffic Impact Analysis (TIA) is required by the City of Orange, so that the impact of the land use proposals on the existing and future circulation system can be adequately assessed. Further, level of service (LOS) data is collected to verify the need for future transportation improvements, such as the proposed project. As such, the traffic data collected by Transportation Studies, Inc. on January 18, 2017 has been incorporated in this section. However, as of December 2018, level of service affects is no longer an impact under CEQA.

Study Intersection Analysis Methodology

The *2000 Highway Capacity Manual* (HCM) reports the level of service (LOS) of intersections based on the average delay per vehicle and was the standard method of traffic capacity analysis during the funding approval for the proposed project. The A to F LOS scale is used to represent the overall operating conditions of the intersection as a whole. LOS A represents excellent operating conditions, and LOS F represents extremely congested operating conditions. The LOS scale is shown in Table 4.17-1, *Intersection LOS Ranges*.

For analysis of LOS at signalized intersections, the Intersection Capacity Utilization (ICU) methodology is utilized. The concept of roadway level of service under the ICU methodology is calculated as the volume of vehicles that pass through the facility divided by the capacity of that facility. A facility is defined as being "at capacity" (volume/capacity [v/c] of 1.00 or greater) when

extreme congestion occurs. This volume/capacity ratio value is based upon volumes by lane, signal phasing, and approach lane configuration.

Table 4.17-1
Intersection LOS Ranges

Level of Service	Volume-to-Capacity Ratio	Description
A	0.00-0.60	Free Flow/Insignificant Delays: No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.
B	0.61-0.70	Stable Operation/Minimal Delays: An occasional approach phase is fully utilized. Many drivers feel somewhat restricted within platoons of vehicles.
C	0.71-0.80	Stable Operation/Acceptable Delays: Major approach phases fully utilized. Most drivers feel somewhat restricted.
D	0.81-0.90	Approaching Unstable/Tolerable Delays: Drivers may have to wait through more than one red signal indication. Queues may develop but dissipate rapidly, without excessive delays.
E	0.91-1.00	Unstable Operation/Significant Delays: Volumes at or near capacity. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
F	N/A	Forced Flow/Excessive Delays: Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections.

Source: City of Orange, *City of Orange General Plan, Table CM-2, Level of Service Definitions for Intersections*, March 2010.

Existing Conditions

Cannon Street is a north-south four-lane roadway (two lanes in each direction), separated by a striped median, and has an 84-foot curb to curb width. Based on the General Plan Circulation Element, Cannon Street is classified as a "Major Arterial" (six lane divided roadway that can accommodate up to 50,700 average daily trips [ADT]). Based on the Orange County Transportation Authority's (OCTA's) *Master Plan of Arterial Highways* (MPAH), published July 22, 2019, Cannon Street is classified as a "Major Arterial Highway" (six lane divided roadway that accommodates 30,000 to 45,000 ADT). Curb, gutter, sidewalk, and an equestrian trail are present on the east side of Cannon Street; the west side of Cannon Street includes curb and gutter only.

Serrano Avenue is an east-west four-lane roadway (two lanes in each direction) that provides access to State Route 91 through Weir Canyon Road approximately six miles east of the project site. Serrano Avenue is separated by a striped median, toward the intersection, and raised planter median further east. Serrano Avenue has a 58-foot curb to curb width. Based on the General Plan Circulation Element, Serrano Avenue is classified as a "Primary Arterial" (four lane divided roadway that can accommodate up to 33,750 ADT). Based on the MPAH, Serrano Avenue is classified as a "Secondary Arterial Highway" (four lane undivided roadway that accommodates 10,000 to 20,000 ADT). Serrano Avenue includes curb, gutter, and sidewalk on the south side; whereas, the north side only includes curb and gutter.

The intersection of Cannon Street and Serrano Avenue is a signal-controlled intersection with limited pedestrian access with associated pedestrian curb ramps (one crosswalk at the east leg of Serrano Avenue and one crosswalk at the north leg of Cannon Street).

The project was approved for funding as part of the *City of Orange 2018-2019 Budget and Five-Year Capital Improvement Program* (CIP) to address the bottle necking currently occurring at this intersection. Traffic data from 2017 analyzed as a part of this decision-making process

determined that both the Cannon Street right turn lane onto Serrano Avenue, and the right turn lane from Serrano Avenue onto Cannon Street operate at a deficient LOS E; refer to Table 4.17-2, *Intersection Analysis – Existing Conditions*.

Table 4.17-2
Intersection Analysis – Existing Conditions

Morning Peak Hour					Evening Peak Hour	
Movement[1]	Lanes	Capacity	Volume	V/C[2]	Volume	V/C[2]
NBL	0	NA	0	NA	0	NA
NBT	2	3,400	546	0.16	1,217	0.36
NBR	1	1,700	231	0.14	1,386	0.82
SBL	1	1,700	33	0.02	79	0.05
SBT	2	3,400	1,513	0.45	581	0.17
SBR	0	NA	0	NA	0	NA
EBL	0	NA	0	NA	0	NA
EBT	0	NA	0	0.00	0	0.00
EBR	0	NA	0	NA	0	NA
WBL	2	3,400	1,197	0.35	425	0.13
WBT	0	NA	0	NA	0	0.00
WBR	1	1,700	158	0.09	55	0.03
			North/South Movements	0.45		0.40
			East/West Movements	0.35		0.13
			Right Turn Components	0.07		0.33
			Yellow Clearance	0.05		0.05
			Total Capacity Utilization	0.92		0.91
			Level of Service (LOS)	**E**		**E**

Notes:
1. NBL = Northbound Left Turn; NBT = Northbound Through Lane; NBR = Northbound Right Turn; SBL = Southbound Left Turn; SBT = Southbound Through Lane; SBR = Southbound Right Turn; EBL = Eastbound Left Turn; EBT = Eastbound Through Lane; EBR = Eastbound Right Turn; WBL = Westbound Left Turn; WBT = Westbound Through Lane; WBR = Westbound Right Turn Lane
2. V/C = volume-to-Capacity ratio

Source: Transportation Studies, Inc., *Traffic Data*, January 18, 2017; refer to Appendix 8.7.

With Project Conditions

The project would add a second dedicated right turn lane on northbound Cannon Street to eastbound Serrano Avenue, and to widen the existing right turn lane on westbound Serrano Avenue to northbound Cannon Street approximately four feet. As shown in Table 4.17-3, *Intersection Analysis – Existing Conditions With Project*, project implementation would improve the p.m. peak hour LOS from LOS E to LOS A.

The project would address bottlenecking occurring at the right turn lane from Cannon Street onto Serrano Avenue and insufficient right turn lane queuing capacity at the right turn lane from Serrano Avenue onto Cannon Street. As such, the project would not worsen the LOS experienced at this intersection but would rather improve it. As such, the proposed project would not conflict with the City's policies governing roadway level of service.

Table 4.17-3
Intersection Analysis – Existing Conditions With Project

		Morning Peak Hour			Evening Peak Hour	
Movement[1]	Lanes	Capacity	Volume	V/C[2]	Volume	V/C[2]
NBL	0	NA	0	NA	0	NA
NBT	2	3,400	546	0.16	1,217	0.36
NBR	2	3,400	231	0.07	1,386	0.41
SBL	1	1,700	33	0.02	79	0.05
SBT	2	3,400	1,513	0.45	581	0.17
SBR	0	NA	0	NA	0	NA
EBL	0	NA	0	NA	0	NA
EBT	0	NA	0	0.00	0	0.00
EBR	0	NA	0	NA	0	NA
WBL	2	3,400	1197	0.35	425	0.13
WBT	0	NA	0	NA	0	0.00
WBR	1	1,700	158	0.09	55	0.03
			North/South Movements	0.45		0.40
			East/West Movements	0.35		0.13
			Right Turn Components	0.07		0.00
			Yellow Clearance	0.05		0.05
			Total Capacity Utilization	0.92		0.58
			Level of Service (LOS)	**E**		**A**

Notes:
1. NBL = Northbound Left Turn; NBT = Northbound Through Lane; NBR = Northbound Right Turn; SBL = Southbound Left Turn; SBT = Southbound Through Lane; SBR = Southbound Right Turn; EBL = Eastbound Left Turn; EBT = Eastbound Through Lane; EBR = Eastbound Right Turn; WBL = Westbound Left Turn; WBT = Westbound Through Lane; WBR = Westbound Right Turn Lane
2. V/C = volume-to-Capacity ratio

Source: Transportation Studies, Inc., *Traffic Data*, January 18, 2017; refer to Appendix 8.7.

Transit, Bicycle and Pedestrian Facilities

The proposed project would involve roadway improvements consistent with the General Plan Circulation and Mobility Element. Generally, the proposed project would result in beneficial impacts to transportation efficiency and safety in the project area

There are no Orange County Transportation Authority (OCTA) bus stops within the project limits or in proximity to the project site.

The north and south travel lanes of Cannon Street are developed with Class II (On-Street) bikeways within the project limits. Further, the north travel lane right-of-way includes a Class I (Off Street) Bikeway (used as an equestrian trail). As depicted on Exhibit 2-4, *Cannon Street – Conceptual Section*, although project implementation would temporarily impact the northbound bikeways during construction activities, the proposed project would preserve existing bicycle facilities within the project limits over the long term. Refer to Response 4.17(c) for a discussion concerning the project's potential to temporarily impact circulation during project construction.

There is limited pedestrian access with associated pedestrian curb ramps (one crosswalk at the east leg of Serrano Avenue and one crosswalk at the north leg of Cannon Street). As noted in Section 2.5, *Project Characteristics*, the proposed project would construct a ten-foot paved pedestrian/equestrian multi-use sidewalk along the east side of Cannon Street; refer to Exhibit 2-4. The project would also relocate the existing Americans with Disabilities Act (ADA) pedestrian curb ramp (on the southeast corner of the Cannon Street and Serrano Avenue

intersection). As a result, the proposed project would improve pedestrian facilities within the project area.

As a roadway improvement project, the project would not generate any new land uses or associated vehicle trips, nor would it generate the demand for additional transit, pedestrian, or bicycle services in the project area. Impacts in this regard would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

In September 2013, the Governor's Office of Planning and Research (OPR) signed Senate Bill (SB) 743 into law, starting a process that fundamentally changes the way transportation impact analysis is conducted under CEQA. These changes include the elimination of auto delay, LOS, and similar measurements of vehicular roadway capacity and traffic congestion as the basis for determining significant impacts. The guidance identifies Vehicle Miles Travelled (VMT) as the most appropriate CEQA transportation metric, along with the elimination of auto delay and LOS for CEQA purposes. The justification for this paradigm shift is that auto delay/LOS impacts lead to improvements that increase roadway capacity and therefore induce more traffic and greenhouse gas emissions.

The proposed project (intersection improvements) would not directly generate vehicle trips and, as such, no new VMT, as vehicle trips are typically generated by land use changes that may indirectly influence VMT. The proposed project would not result in increases in the rate of vehicle trips or VMT. Rather, the proposed traffic facility improvements provide improved circulation through an area with existing and forecast traffic congestion. The project is considered necessary to implement the City's Capital Improvement Program to address bottlenecking occurring at the right turn lane from Cannon Street onto Serrano Avenue and insufficient right turn lane queuing capacity at the right turn lane from Serrano Avenue onto Cannon Street. As such, the project would not conflict with CEQA Guidelines Section 15064.3(b). No impact would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

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

The project has the potential to result in safety hazards during the short-term construction process. Although roadways in the project area, including Cannon Street and Serrano Avenue, would remain open to traffic at all times, partial lane closures would be required in order to construct the intersection improvements. During these periods, the City would be required to implement a temporary Traffic Control Plan (TCP) to minimize congestion and safety impacts during the construction process (Mitigation Measure TR-1). The TCP would meet City of Orange

traffic control guidelines, and would include potential measures such as construction signage, limitations on timing for lane closures to avoid peak hours, temporary striping plans, and the need for a construction flagperson to direct traffic during heavy equipment use, among others. The TCP would provide congestion relief during short-term construction activities and ensure safe travel, along existing travel routes. Thus, with implementation of Mitigation Measure TR-1, impacts would be reduced to less than significant levels.

On a long-term operational basis, the proposed project is expected to result in a beneficial impact pertaining to design hazards. The project would address queuing deficiencies, relieve existing and future congestion at the intersection, and provide for enhanced traffic operations. With this reduction in congestion, emergency access in the project area would be improved. Operational impacts are expected to be less than significant in this regard.

Significance Determination: Potentially Significant Impact.

Mitigation Measures:

TR-1 Prior to the initiation of construction, the City of Orange Public Works Department shall prepare a Traffic Control Plan (TCP). The TCP shall include measures to minimize potential safety impacts during the short-term construction process, when partial lane closures would be required, and shall specify that one direction of travel in each direction plus the turn lane must always be maintained throughout project construction. It shall include measures such as construction signage, limitations on timing for lane closures to avoid peak hours, temporary striping plans, and the need for a construction flagperson to direct traffic during heavy equipment use. The TCP shall be incorporated into project specifications for verification prior to final plan approval.

Level of Significance After Mitigation: Less Than Significant Impact With Mitigation Incorporated.

d) Result in inadequate emergency access?

Refer to Response 4.17(c). Cannon Street and Serrano Avenue would remain open to traffic at all times; while a partial lane closure may be required, any impact would be temporary in nature and implementation of Mitigation Measure TR-1 would ensure emergency access is maintained. With implementation of Mitigation Measure TR-1, impacts in this regard would be reduced to less than significant levels.

Significance Determination: Potentially Significant Impact.

Mitigation Measures: Refer to Mitigation Measure TR-1.

Level of Significance After Mitigation: Less Than Significant Impact With Mitigation Incorporated.

4.18 TRIBAL CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. 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:				
1) 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).				✓
2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.		✓		

As of July 1, 2015, California Assembly Bill 52 (AB 52) was enacted and expanded CEQA by establishing a formal consultation process for California tribes within the CEQA process. The bill specifies that any project may affect or cause a substantial adverse change in the significance of a tribal cultural resource would require a lead agency to "begin consultation with a California Native American tribe that is traditional and culturally affiliated with the geographic area of the proposed project." Section 21074 of AB 52 also defines a new category of resources under CEQA called "tribal cultural resources." Tribal cultural resources are defined as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and are either listed on or eligible for the California Register of Historical Resources or a local historic register, or if the lead agency chooses to treat the resource as a tribal cultural resource.

On February 19, 2016, the California Natural Resources Agency proposed to adopt and amend regulations as part of AB 52 implementing Title 14, Division 6, Chapter 3 of the California Code of Regulations, CEQA Guidelines, to include consideration of impacts to tribal cultural resources pursuant to Government Code Section 11346.6. On September 27, 2016, the California Office of Administrative Law approved the amendments to Appendix G of the CEQA Guidelines, and these amendments are addressed within this Initial Study.

Impact Analysis:

a) 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:

1) ***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)?***

As detailed in Response 4.5(a), no historic resources listed or eligible for listing in a State or local register of historic resources are located within the project site. Therefore, no impacts related to historic tribal cultural resources defined in Public Resources Code Section 5020.1(k) would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

2) ***A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.***

In compliance with AB 52, the City of Orange distributed letters notifying each tribe that requested to be on the City's list for the purposes of AB 52 of the opportunity to consult with the City regarding the proposed project. The letters were distributed by certified mail on December 16, 2019. The tribes had 30 days to respond to the City's request for consultation. The Gabrieleno Band of Mission Indians – Kizh Nation tribal representative replied within the 30 days stating the project site is within its ancestral tribal territory and requesting consultation, and the City consulted with the tribe on May 28, 2020.

As detailed in the Geotechnical Investigation, the top six to nine feet of soils consists of engineered fill materials, which have been disturbed as part of past grading activities. As the proposed project would have a maximum excavation depth of four feet below ground surface, native soils are not anticipated to be disturbed as a result of project implementation, and consultation was concluded by the City on August 20, 2020. Notwithstanding, in the event that unknown cultural resources are found and identified as Native American in origin, a qualified archaeologist would be required to consult with the City of Orange to implement Native American consultation procedures (Mitigation Measure CUL-1). Upon implementation of Mitigation Measure CUL-1, potential impacts involving unknown tribal cultural resources would be reduced to less than significant levels.

Significance Determination: Potentially Significant Impact.

Mitigation Measures: Refer to Mitigation Measure CUL-1.

Level of Significance After Mitigation: Less Than Significant Impact With Mitigation Incorporated.

4.19 UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?			✓	
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?				✓
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?				✓
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?			✓	
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid wastes?			✓	

Impact Analysis:

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?

Dry utilities, including natural gas and fiberoptic cable, electrical utility boxes, and a street light would be relocated within the existing roadway rights-of-way to accommodate the proposed improvements. The project does not propose the construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunication facilities. The project would install a new Filterra unit upstream the existing catch basin for water quality purposes. The project proposes replacement of existing utilities, which would be restored to the original line and grade and should be treated as routine maintenance.

The project's potential environmental effects for relocation of the abovementioned utilities are analyzed in this IS/MND. Utility relocation would be subject to compliance with all applicable local, State, and Federal laws, ordinances, and regulations, as well as the specific mitigation measures in this IS/MND. Further, project area is completely developed/urbanized and has been previously affected by grading and ground disturbance. As such, compliance with the relevant laws, ordinances, and regulations, as well as the specified mitigation measures, would ensure the project's construction-related environmental impacts associated with relocated utilities would be reduced to less than significant levels.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

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

The proposed project involves roadway improvements and would not introduce a new land use that would result in water consumption. It is expected that water consumption would be similar to existing conditions. No impacts are anticipated in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

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?

The proposed project involves roadway improvements and would not include the construction of any uses capable of producing wastewater. No impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

The proposed project would result in intersection improvements and would not include any habitable structures, and, thus, would not have the capability to produce solid waste during long-term operations. Although the project may require the disposal of debris during the grading/excavation process (soil, asphalt, concrete, etc.), the generation of these materials would be short-term in nature and would not 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. Thus, impacts in this regard would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

e) Comply with Federal, State, and local management and reduction statutes and regulations related to solid wastes?

The proposed project would comply with all Federal, State, and local statutes and regulations related to solid waste, including the California Integrated Waste Management Act and City requirements for solid waste generated during the construction process. Impacts would be less than significant in this regard.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

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4.20 WILDFIRE

If located in or near State responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?		✓		
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?				✓
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?			✓	
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?				✓

Impact Analysis:

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?

According to the California Department of Forestry and Fire, the project site is not located in or near a State responsibility area. However, it is identified as a very high fire hazard severity zone.[1]

According to the General Plan, the City maintains an emergency preparedness and emergency response procedures plan (City of Orange Emergency Operations Plan [Emergency Operations Plan]) in accordance with the State Office of Emergency Services guidelines for multi-hazard functional planning.

Project construction is anticipated to occur for approximately six months in one phase. Construction traffic may have the potential to impact the local circulation system, thus affecting the Emergency Operations Plan. However, a temporary Traffic Control Plan (TCP) would be prepared and implemented as part of Mitigation Measure TR-1, which would minimize congestion and safety impacts during the construction process. The TCP would meet City of Orange traffic control guidelines, and would include potential measures such as construction signage, limitations on timing for lane closures to avoid peak hours, temporary striping plans, and the need for a construction flagperson to direct traffic during heavy equipment use, among others. The TCP would provide congestion relief during short-term construction activities and ensure safe travel,

[1] California Department of Forestry and Fire Protection, *Very High Fire Hazard Severity Zones in LRA – Orange Map*, October 2011.

along existing travel routes. Thus, with implementation of Mitigation Measure TR-1, impacts would be less than significant.

Significance Determination: Potentially Significant Impact.

Mitigation Measures: Refer to Mitigation Measure TR-1.

Level of Significance After Mitigation: Less Than Significant Impact With Mitigation Incorporated.

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?

The project would involve roadway improvements within existing right-of-way and would not construct any new habitable structures or facilities that could expose future occupants to pollutant concentrations from a wildfire or uncontrolled spread of a wildfire. Thus, no impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

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?

The project proposes to add a second dedicated right turn lane on the northbound side of Cannon Street and extend the right turn lane on the northbound side of Serrano Avenue. Additional improvements involve the relocation utility boxes, street lights, and sewer and water pipelines. The project would also install water quality-related storm drain infrastructure. The relocation/installation of utilities in the project area would not exacerbate fire risks or result in temporary or ongoing impacts to the environment. Thus, impacts in this regard would be less than significant.

Significance Determination: Less Than Significant Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

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?

The project would involve intersection improvements within existing right-of-way and would not construct any new habitable structures or facilities that could expose people or structure to significant risk associated with downslope or downstream flooding/landslides. Thus, no impacts would occur in this regard.

Significance Determination: No Impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

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4.21 MANDATORY FINDINGS OF SIGNIFICANCE

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?		✓		
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)?		✓		
c. Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?		✓		

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?

As concluded in Section 4.4, *Biological Resources*, the project site is heavily disturbed and is located within an urbanized area of the City. Based on the site's condition, no sensitive plant or animal species would be present. Thus, the project would have no impacts on sensitive plant or animal species. As indicated in Section 4.5, *Cultural Resources*, and Section 4.18, *Tribal Cultural Resources*, project implementation is not anticipated to result in impacts to cultural or tribal cultural resources based on the site's developed condition and existing use as a roadway intersection. However, in the unlikely event that unknown buried archaeological resources are encountered during ground disturbance activities, Mitigation Measure CUL-1 would require all project construction efforts to halt until an archaeologist examines the site, identifies the archaeological significance of the find, and recommends a course of action. Further, in the event that the unknown cultural resources found are identified as Native American in origin, a qualified archaeologist would be required to consult with the City of Orange to implement Native American consultation procedures. In the unlikely event that paleontological resources are encountered during project construction, Mitigation Measure GEO-1 would require a qualified paleontological monitor to be present during the project's ground-disturbing activities. In the event that paleontological resources are encountered during ground-disturbing activities, Mitigation Measure GEO-1 would require all construction activities within 50 feet of the discovery to halt until a qualified paleontologist identifies the paleontological significance of the find and recommends a course of action. Therefore, the proposed project would not potentially 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.

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)?

A significant impact may occur if a proposed project, in conjunction with related projects, would result in impacts that are less than significant when viewed separately, but would be significant when viewed together. As concluded in Sections 4.1 through 4.20, the proposed project would not result in any significant impacts in any environmental categories with implementation of project mitigation measures. Implementation of mitigation measures at the project-level would reduce the potential for the incremental effects of the proposed project to be less than considerable when viewed in connection with the effects of past projects, current projects, or probable future projects.

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

Previous sections of this Initial Study reviewed the proposed project's potential impacts related to aesthetics, air quality, noise, hazards and hazardous materials, traffic, and other issues. As concluded in these previous discussions, the proposed project would not have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly, following conformance with the existing regulatory framework and mitigation measures. Impacts would be reduced to less than significant levels in this regard.

5.0 INVENTORY OF MITIGATION MEASURES

BIOLOGICAL RESOURCES

BIO-1 In the event that vegetation and tree removal should occur between January 15 and September 15, the project applicant shall retain a qualified biologist to conduct a nesting bird survey no more than three days prior to commencement of construction activities. The biologist conducting the clearance survey shall document the negative results if no active bird nests are observed on the project site or within the vicinity during the clearance survey with a brief letter report, submitted to the City of Orange Community Development Department prior to construction, indicating that no impacts to active bird nests would occur before construction can proceed. If an active avian nest is discovered during the pre-construction clearance survey, construction activities shall stay outside of a 300-foot buffer around the active nest. For listed and raptor species, this buffer shall be 500 feet. A biological monitor shall 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. Prior to the commencement of construction activities and the issuance of any permits, results of the pre-construction survey and any subsequent monitoring shall be provided to the City of Orange Community Development Department.

CULTURAL RESOURCES

CUL-1 If previously unidentified cultural resources are encountered during ground-disturbing activities, work in the immediate area shall halt and a qualified archaeologist, defined as an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards for archaeology, shall be contacted immediately to evaluate the find. The City of Orange Public Works Department shall include a standard inadvertent discovery clause in the construction contract to inform contractors of this requirement. If the discovery proves to be significant under CEQA, the qualified archaeologist shall expeditiously prepare and implement a research design and archaeological data recovery plan that captures those categories of data for which the site is significant in accordance with Section 15064.5 of the CEQA Guidelines. The archaeologist shall also expeditiously perform appropriate technical analyses, prepare a comprehensive report complete with methods, results, and recommendations, and provide for the permanent curation or repatriation of the recovered resources in cooperation with the designated most likely descendant as needed. The report shall be submitted to the City of Orange Community Development Department, the South Central Coastal Information Center, and the State Historic Preservation Office (SHPO), if required. In the event that an identified cultural resource(s) is of Native American origin, the qualified archaeologist shall consult with the City of Orange to implement Native American consultation procedures. Construction shall not resume until the qualified archaeologist states in writing that the proposed construction activities would not significantly damage any archaeological resources.

GEOLOGY AND SOILS

GEO-1 The City of Orange shall retain a retained a qualified paleontologist (B.S./B.A. in geology, or related discipline with an emphasis in paleontology and demonstrated experience and competence in paleontological research, fieldwork, reporting, and curation) to monitor ground-disturbing activities during project construction. In the event that paleontological resources are encountered during ground-disturbing activities, all construction activities in the vicinity of the find shall halt within 50 feet of the discovery until the qualified paleontologist identifies the paleontological significance of the find and recommends a course of action. Construction shall not resume within 50 feet of the discovery until the site paleontologist states in writing that the proposed construction activities would not significantly damage paleontological resources.

NOISE

NOI-1 Prior to the issuance of a grading permit, the City of Orange Public Works Department shall demonstrate that the project complies with the following:

- Construction contracts specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other State-required noise attenuation devices.
- Construction haul routes shall be designed to avoid noise sensitive uses (e.g., residences, convalescent homes, etc.), to the extent feasible.
- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.
- Construction activities shall not take place outside of the allowable hours specified by the City of Orange Municipal Code Section 8.24.050 (7:00 a.m. and 8:00 p.m. on any day except for Sundays or Federal holidays, or between the hours of 9:00 a.m. and 8:00 p.m. on Sundays or Federal holidays). Noise generated outside of the hours specified are subject to the noise standards identified in Municipal Code Section 8.24.040.

During project construction, the Public Works Director shall be the responsible party to ensure that the construction contractor complies with the aforementioned measures.

TRANSPORTATION

TR-1 Prior to the initiation of construction, the City of Orange Public Works Department shall prepare a Traffic Control Plan (TCP). The TCP shall include measures to minimize potential safety impacts during the short-term construction process, when partial lane closures would be required, and shall specify that one direction of travel in each direction plus the turn lane must always be maintained throughout project construction. It shall include measures such as construction signage, limitations on timing for lane closures to avoid peak hours, temporary striping plans, and the need for a construction flagperson to direct traffic during heavy equipment use. The TCP shall be incorporated into project specifications for verification prior to final plan approval.

6.0 REFERENCES

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24. Michael Baker International, *Hydrology and Hydraulic Technical Memorandum, Cannon Street & Serrano Avenue Intersection Improvement Plan*, dated June 29, 2020.

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