State Route 55 (SR 55) Improvement Project Between Interstate 5 (I-5) and State Route 91(SR 91)

ORANGE COUNTY, CALIFORNIA DISTRICT 12 – ORA – 55 (Post Miles 10.4/R17.9) EA 0K7200

Initial Study with Mitigated Negative Declaration/Environmental Assessment with Finding of No Significant Impact



Prepared by the State of California Department of Transportation

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans.

March 2020

General Information about This Document

What's in this document:

The California Department of Transportation (Department, Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this Initial Study/Environmental Assessment (IS/EA), which examined the potential environmental impacts of the alternatives being considered for the proposed project located in Orange County, California. Caltrans is the lead agency under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The document tells why the project is being proposed, what alternatives we have considered for the project, how the existing environment could be affected by the project, the potential impacts of each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

The Draft Initial Study/Environmental Assessment was circulated to the public for 30 days between September 30 and October 30, 2019. Comments received during this period are included in Appendix F. Throughout this final environmental document, a vertical line in the margin indicates a change made since the draft document circulation. Minor editorial changes and clarifications have not been so indicated. Additional copies of this document and the related technical studies are available for review at the following locations:

Caltrans District 12	Charles P. Taft Branch Library
1750 East 4th, Suite 100	740 East Taft Avenue
Santa Ana, CA 92705	Orange, CA 92865
Orange County Transportation Authority	Santa Ana Public Library
550 South Main Street	26 Civic Center Plaza
Orange, CA 92868	Santa Ana, CA 92701
Orange Public Library	Tustin Branch Library
407 East Chapman Avenue	345 East Main Street
Orange, CA 92866	Tustin, CA 92780

This document may be requested at the following postal address and email:

• Request document via postal mail to the following:

Charles Baker, Senior Environmental Planner Department of Transportation, District 12 Environmental Analysis – Specialist Branch 1750 East 4th, Suite 100, Santa Ana, CA 92705

• Request document via email to: <u>D12SR55NorthProject@dot.ca.gov</u>

Alternative formats:

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Department of Transportation, Attn: Charles Baker, Senior Environmental Planner, Department of Transportation, District 12 Environmental Analysis – Specialist Branch 1750 East 4th, Suite 100, Santa Ana, CA 92705; (657) 328-6000 Voice; or use the California Relay Service 1 (800) 735-2929 (TTY), 1 (800) 735-2922 (Voice) or 711."

SCH#_2019099104 12-ORA-55- PM 10.4/R17.9 0K7200 1213000149

Capacity and operational improvements on State Route 55 (SR 55) between Interstate 5 (I-5) and State Route 91 (SR 91) (Post Miles 10.4 to R17.9) in the Cities of Tustin, Santa Ana, Orange and Anaheim in Orange County, California.

INITIAL STUDY WITH MITIGATED NEGATIVE DECLARATION/ENVIRONMENTAL ASSESSMENT WITH FINDING OF NO SIGNIFICANT IMPACT

Submitted Pursuant to: (State) Division 13, California Public Resources Code (Federal) 42 United States Code (USC) 4332(2)(C) and 49 USC 303

THE STATE OF CALIFORNIA Department of Transportation

Responsible Agencies: California Transportation Commission Orange County Transportation Authority

Date

Christopher Flynn Deputy District Director – Environmental Analysis California Department of Transportation District 12 CEQA/NEPA Lead Agency

The following person may be contacted for more information about this document:

Charles Baker, Branch Chief, Environmental Analysis – Specialist Branch California Department of Transportation District 12 1750 East 4th, Suite 100, Santa Ana, CA 92705

Mitigated Negative Declaration

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans) District 12, in cooperation with the Orange County Transportation Authority (OCTA), proposes capacity and operational improvements on State Route (SR) 55 in both directions from just north of the Interstate 5 (I-5)/State Route 55 (SR 55) interchange to just south of SR 91 between Post Miles 10.4 and R17.9 in the cities of Tustin, Santa Ana, Orange, and Anaheim in Orange County, California.

Determination

Caltrans has prepared an Initial Study for this project and, following public review, Caltrans determined from this study that the proposed project would not have a significant effect on the environment for the following reasons: The proposed SR 55 project would have no effect on Agricultural and Forest Resources, Mineral Resources, Population and Housing, and Recreation. The proposed SR 55 project would have less than significant effects to: Aesthetics, Air Quality, Cultural Resources, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Noise, Public Services, Transportation and Traffic, Tribal Cultural Resources, Utilities and Service Systems, Climate Change, and Energy. With the following mitigation measures incorporated, the proposed project would have less than significant effects to Biological Resources (BIO-1, BIO-2, and BIO-3) and Paleontological Resources (PALEO-1 and PALEO-2).

Christopher Flynn Deputy District Director - Environmental Analysis California Department of Transportation District 12 **CEQA/NEPA** Lead Agency

3/30/20 Date

CALIFORNIA DEPARTMENT OF TRANSPORTATION FINDING OF NO SIGNIFICANT IMPACT (FONSI)

State Route 55 (SR 55) Improvement Project

Between Interstate 5 (I-5) and State Route 91(SR 91)

FOR

The California Department of Transportation (Caltrans) in cooperation with the Orange County Transportation Authority (OCTA), has determined that The Build Alternative will have no significant impact on the human environment. This Finding of No Significant Impact (FONSI) is based on the attached Environmental Assessment (EA), which has been independently evaluated by Caltrans and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an Environmental Impact Statement (EIS) is not required. Caltrans takes full responsibility for the accuracy, scope, and content of the attached EA and supporting technical studies that the EA is based upon.

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.

3/30/20 Date

Christopher Flynn Deputy District Director - Environmental Analysis California Department of Transportation District 12 **CEQA/NEPA** Lead Agency

Table of Contents

GENERAL IN	FORMA	TION ABOUT THIS DOCUMENT	III
MITIGATED 1	NEGATI	VE DECLARATION	VII
CHAPTER 1	PRO	OPOSED PROJECT	1-1
1.1	Introdu	ction	1-1
	1.1.1	Existing Facility	1-1
1.2	Purpose	e and Need	
	1.2.1	Purpose	
	1.2.2	Need	
1.3	Project	Description	1-25
	1.3.1	Build Alternative (Preferred Alternative)	1-25
	1.3.2	No Build Alternative	1-36
	1.3.3	Comparison of Alternatives	1-37
	1.3.4	Identification of the Preferred Alternative	1-42
	1.3.5	Alternatives Considered but Eliminated from Further Discussion Pr	rior to the
		"Draft" Initial Study/Environmental Assessment (IS/EA)	1-43
	1.3.6	Other Alternatives Considered	1-45
1.4	Permits	and Approvals Needed	1-46
CHAPTER 2	AFI	FECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES	S, AND
	AV	OIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES	S2-1
Huma	n Enviro	nment	2.1-1
2.1	Land U	se	2.1-1
	2.1.1	Existing and Future Land Use	2.1-1
	2.1.2	Consistency with State, Regional, and Local Plans and Programs	2.1-4
	2.1.3	Environmental Consequences	2.1-9
	2.1.4	Avoidance, Minimization, and/or Mitigation Measures	2.1-14
2.2	Growth	1	
	2.2.1	Regulatory Setting	2.2-1
	2.2.2	Affected Environment	2.2-1
	2.2.3	Environmental Consequences	2.2-1
	2.2.4	Avoidance, Minimization, and/or Mitigation Measures	2.2-3
2.3	Commu	unity Impacts	2.3-1
	2.3.1	Community Character and Cohesion	2.3-1
	2.3.2	Relocations and Real Property Acquisition	2.3-13
	2.3.3	Environmental Justice	
2.4	Utilities	s and Emergency Services	2.4-1
	2.4.1	Affected Environment	2.4-1
	2.4.2	Environmental Consequences	2.4-2
	2.4.3	Avoidance, Minimization, and/or Mitigation Measures	2.4-4
2.5	Traffic	and Transportation/Pedestrian and Bicycle Facilities	2.5-1
	2.5.1	Regulatory Setting	2.5-1
	2.5.2	Affected Environment	2.5-1
	2.5.3	Environmental Consequences	2.5-17
	2.5.4	Avoidance, Minimization, and/or Mitigation Measures	2.5-52
2.6	Visual/	Aesthetics	2.6-1
	2.6.1	Regulatory Setting	2.6-1
	2.6.2	Affected Environment	2.6-1
	2.6.3	Environmental Consequences	2.6-8
	2.6.4	Avoidance, Minimization, and/or Mitigation Measures	2.6-10
2.7	Cultura	l Resources	

	2.7.1	Regulatory Setting	2.7-1
	2.7.2	Affected Environment	2.7-2
	2.7.3	Environmental Consequences	
	2.7.4	Avoidance, Minimization, and/or Mitigation Measures	2.7-10
Physi	cal Enviro	nment	
2.8	Hvdrolog	gy and Floodplains	
	2.8.1	Regulatory Setting	
	2.8.2	Affected Environment	2.8-1
	2.8.3	Environmental Consequences	
	2.8.4	Avoidance Minimization and/or Mitigation Measures	2.8-11
2.9	Water O	uality and Stormwater Runoff	2.9-1
2.9	2.9.1	Regulatory Setting	2.9-1
	2.9.2	Affected Environment	2.9-4
	293	Environmental Consequences	2 9-7
	2.9.5	Avoidance Minimization and/or Mitigation Measures	2 9-11
2 10	Geology	/Soils/Seismology/Tonography	2 10-1
2.10	2101	Regulatory Setting	2 10-1
	2.10.1	A ffected Environment	2 10-1
	2.10.2	Environmental Consequences	2 10-5
	2.10.3 2 10 4	Avoidance Minimization and/or Mitigation Measures	2 10-8
2 1 1	2.10. 4 Daleonto	logy	2 11 1
2.11	2 11 1	Degulatory Setting	2.11-1 2.11-1
	2.11.1 2 11 2	A ffected Environment	
	2.11.2 2.11.2	Environmental Consequences	2 11 0
	2.11.3 2.11.4	Avoidence Minimization and/or Mitigation Massures	
2 1 2	2.11.4 Uozordoj	Avoluance, Minimization, and/or Mitigation Measures	2.11-11
2.12		Bogulatory Sotting	2.12-1
	2.12.1	A ffe at a 1 Environment	2.12-1
	2.12.2	Affected Environment.	
	2.12.3	Environmental Consequences	
2.12	2.12.4 A in Oreal	Avoidance, Minimization, and/or Mitigation Measures	
2.13	Air Quai		
	2.13.1	Regulatory Setting	
	2.13.2	Affected Environment	
	2.13.3	Environmental Consequences	
0.1.4	2.13.4	Avoidance, Minimization, and/or Mitigation Measures	
2.14	Noise		
	2.14.1	Regulatory Setting	
	2.14.2	Affected Environment	
	2.14.3	Environmental Consequences	
D • 1	2.14.4	Avoidance, Minimization, and/or Abatement Measures	
Biolo	gical Envi	ronment	
2.15	Natural (Communities	
	2.15.1	Regulatory Setting	2.15-1
	2.15.2	Affected Environment	2.15-1
	2.15.3	Environmental Consequences	
	2.15.4	Avoidance, Minimization, and/or Mitigation Measures	2.15-16
2.16	Wetland	s and Other Waters	
	2.16.1	Regulatory Setting	2.16-1
	2.16.2	Attected Environment	2.16-2
	2.16.3	Environmental Consequences	2.16-14
	2.16.4	Avoidance, Minimization, and/or Mitigation Measures	2.16-15
2.17	Plant Sp	ecies	2.17-1

	2.17.1	Regulatory Setting	2.17-1
	2.17.2	Affected Environment	2.17-1
	2.17.3	Environmental Consequences	2.17-4
	2.17.4	Avoidance, Minimization, and/or Mitigation Measures	2.17-4
2.18	Animal S	Species	2.18-1
	2.18.1	Regulatory Setting	2.18-1
	2.18.2	Affected Environment	2.18-1
	2.18.3	Environmental Consequences	2.18-5
	2.18.4	Avoidance, Minimization, and/or Mitigation Measures	2.18-7
2.19	Threaten	ed and Endangered Species	2.19-1
	2.19.1	Regulatory Setting	2.19-1
	2.19.2	Affected Environment	2.19-1
	2.19.3	Environmental Consequences	2.19-3
	2.19.4	Avoidance, Minimization, and/or Mitigation Measures	2.19-4
2.20	Invasive	Species	2.20-1
	2.20.1	Regulatory Setting	2.20-1
	2.20.2	Affected Environment	2.20-1
	2.20.3	Environmental Consequences	2.20-2
	2.20.4	Avoidance, Minimization, and/or Mitigation Measures	2.20-2
2.21	Energy		2.21-1
	2.21.1	Regulatory Setting	2.21-1
	2.21.2	Affected Environment	2.21-1
	2.21.3	Environmental Consequences	2.21-2
	2.21.4	Avoidance, Minimization, and/or Mitigation Measures	2.21-6
2.22	Cumulati	ive Impacts	2.22-1
	2.22.1	Regulatory Setting	2.22-1
	2.22.2	Methodology	2.22-1
	2.22.3	Resources Evaluated for Cumulative Impacts	2.22-5
	2.22.4	Avoidance, Minimization, and/or Mitigation Measures	2.22-6
CHAPTER 3	CALI	IFORNIA ENVIRONMENTAL QUALITY ACT EVALUATION	
3.1	CEQA E	nvironmental Checklist	
	3.1.1	Aesthetics	
	3.1.2	Agriculture and Forest Resources	
	3.1.3	Air Quality	
	3.1.4	Biological Resources	
	3.1.5	Cultural Resources	
	3.1.6	Energy	
	3.1.6 3.1.7	Energy Geology and Soils	
	3.1.6 3.1.7 3.1.8	Energy Geology and Soils Greenhouse Gas Emissions	3-10 3-12 3-15
	3.1.6 3.1.7 3.1.8 3.1.9	Energy Geology and Soils Greenhouse Gas Emissions Hazards and Hazardous Materials	
	3.1.6 3.1.7 3.1.8 3.1.9 3.1.10	Energy Geology and Soils Greenhouse Gas Emissions Hazards and Hazardous Materials Hydrology and Water Quality	3-10 3-12 3-15 3-16 3-18
	3.1.6 3.1.7 3.1.8 3.1.9 3.1.10 3.1.11	Energy Geology and Soils Greenhouse Gas Emissions Hazards and Hazardous Materials Hydrology and Water Quality Land Use and Planning	3-10 3-12 3-15 3-16 3-18 3-21
	3.1.6 3.1.7 3.1.8 3.1.9 3.1.10 3.1.11 3.1.12	Energy Geology and Soils Greenhouse Gas Emissions Hazards and Hazardous Materials Hydrology and Water Quality Land Use and Planning Mineral Resources	3-10 3-12 3-15 3-16 3-18 3-21 3-22
	3.1.6 3.1.7 3.1.8 3.1.9 3.1.10 3.1.11 3.1.12 3.1.13	Energy Geology and Soils Greenhouse Gas Emissions Hazards and Hazardous Materials Hydrology and Water Quality Land Use and Planning Mineral Resources Noise	3-10 3-12 3-15 3-16 3-18 3-21 3-22 3-22
	3.1.6 3.1.7 3.1.8 3.1.9 3.1.10 3.1.11 3.1.12 3.1.13 3.1.14	Energy Geology and Soils Greenhouse Gas Emissions Hazards and Hazardous Materials Hydrology and Water Quality Land Use and Planning Mineral Resources Noise Population and Housing	3-10 3-12 3-15 3-16 3-18 3-21 3-22 3-22 3-22
	3.1.6 3.1.7 3.1.8 3.1.9 3.1.10 3.1.11 3.1.12 3.1.13 3.1.14 3.1.15	Energy Geology and Soils Greenhouse Gas Emissions Hazards and Hazardous Materials Hydrology and Water Quality Land Use and Planning Mineral Resources Noise Population and Housing Public Services	3-10 3-12 3-15 3-16 3-18 3-21 3-22 3-22 3-22 3-24 3-24
	$\begin{array}{c} 3.1.6\\ 3.1.7\\ 3.1.8\\ 3.1.9\\ 3.1.10\\ 3.1.11\\ 3.1.12\\ 3.1.13\\ 3.1.14\\ 3.1.15\\ 3.1.16\end{array}$	Energy Geology and Soils Greenhouse Gas Emissions Hazards and Hazardous Materials Hydrology and Water Quality Land Use and Planning Mineral Resources Noise Population and Housing Public Services Recreation	3-10 3-12 3-15 3-16 3-18 3-21 3-22 3-22 3-24 3-24 3-24 3-25
	$\begin{array}{c} 3.1.6\\ 3.1.7\\ 3.1.8\\ 3.1.9\\ 3.1.10\\ 3.1.11\\ 3.1.12\\ 3.1.13\\ 3.1.14\\ 3.1.15\\ 3.1.16\\ 3.1.17\end{array}$	Energy Geology and Soils Greenhouse Gas Emissions Hazards and Hazardous Materials Hydrology and Water Quality Land Use and Planning Mineral Resources Noise Population and Housing Public Services Recreation Transportation	3-10 3-12 3-15 3-16 3-18 3-21 3-22 3-22 3-24 3-24 3-24 3-25 3-26
	$\begin{array}{c} 3.1.6\\ 3.1.7\\ 3.1.8\\ 3.1.9\\ 3.1.10\\ 3.1.11\\ 3.1.12\\ 3.1.13\\ 3.1.14\\ 3.1.15\\ 3.1.16\\ 3.1.17\\ 3.1.18\end{array}$	Energy Geology and Soils Greenhouse Gas Emissions Hazards and Hazardous Materials Hydrology and Water Quality Land Use and Planning Mineral Resources Noise Population and Housing Public Services Recreation Transportation Tribal Cultural Resources	3-10 3-12 3-15 3-16 3-18 3-21 3-22 3-22 3-24 3-24 3-25 3-26 3-29
	$\begin{array}{c} 3.1.6\\ 3.1.7\\ 3.1.8\\ 3.1.9\\ 3.1.10\\ 3.1.11\\ 3.1.12\\ 3.1.13\\ 3.1.14\\ 3.1.15\\ 3.1.16\\ 3.1.17\\ 3.1.18\\ 3.1.19\\ \end{array}$	Energy Geology and Soils Greenhouse Gas Emissions Hazards and Hazardous Materials Hydrology and Water Quality Land Use and Planning Mineral Resources Noise Population and Housing Public Services Recreation Transportation Tribal Cultural Resources Utilities and Service Systems	$\begin{array}{c}3-10\\3-12\\3-15\\3-16\\3-18\\3-21\\3-22\\3-22\\3-24\\3-24\\3-26\\3-26\\3-20\\3-20\\3-20\\3-30\\ \end{array}$
	$\begin{array}{c} 3.1.6\\ 3.1.7\\ 3.1.8\\ 3.1.9\\ 3.1.10\\ 3.1.11\\ 3.1.12\\ 3.1.13\\ 3.1.14\\ 3.1.15\\ 3.1.16\\ 3.1.17\\ 3.1.18\\ 3.1.19\\ 3.1.20\\ \end{array}$	Energy Geology and Soils Greenhouse Gas Emissions Hazards and Hazardous Materials Hydrology and Water Quality Land Use and Planning Mineral Resources Noise Population and Housing Public Services Recreation Transportation Tribal Cultural Resources Utilities and Service Systems Wildfire	$\begin{array}{c}3-10\\3-12\\3-15\\3-16\\3-18\\3-21\\3-22\\3-22\\3-24\\3-24\\3-25\\3-26\\3-29\\3-30\\3-32\end{array}$
	$\begin{array}{c} 3.1.6\\ 3.1.7\\ 3.1.8\\ 3.1.9\\ 3.1.10\\ 3.1.11\\ 3.1.12\\ 3.1.13\\ 3.1.14\\ 3.1.15\\ 3.1.16\\ 3.1.17\\ 3.1.18\\ 3.1.19\\ 3.1.20\\ 3.1.21\\ \end{array}$	Energy Geology and Soils Greenhouse Gas Emissions Hazards and Hazardous Materials Hydrology and Water Quality Land Use and Planning Mineral Resources Noise Population and Housing Public Services Recreation Transportation Tribal Cultural Resources Utilities and Service Systems Wildfire Mandatory Findings of Significance	$\begin{array}{c}3-10\\3-12\\3-15\\3-16\\3-18\\3-21\\3-22\\3-22\\3-24\\3-24\\3-26\\3-26\\3-20\\3-30\\3-32\\3-33\end{array}$

3.2	Climate Change	
	3.2.1 Regulatory Setting	
	3.2.2 Environmental Setting	
	3.2.3 Project Analysis	
	3.2.4 CEQA Conclusion	
CHAPTER 4	COMMENTS AND COORDINATION	
4.1	Notice of Initiation of Studies	
4.2	Interagency Consultation	
	4.2.1 Native American Heritage Coordination	
	4.2.2 Local Governments	
	4.2.3 Local Historical Society/Historic Preservation Groups	
	4.2.4 State Historic Preservation Officer	
	4.2.5 Transportation Conformity Working Group	
	4.2.6 United States Fish and Wildlife Service	
	4.2.7 National Marine Fisheries/National Oceanic and Atmospheric Admi	nistration
	4.2.8 Noise Barrier Survey	
	4.2.9 Air Quality Conformity Analysis Determination	4-41
4.3	Community Outreach and Public Involvement	
	4.3.1 Project Development Team	
	4.3.2 Orange County Transportation Authority Project Website	
	4.3.3 Public Review/Circulation of Draft IS/EA	
	4.3.4 Comments and Responses to Public Comments	
CHAPTER 5	LIST OF PREPARERS	
5.1	California Department of Transportation. District 12.	
5.2	Orange County Transportation Authority	
5.3	Jacobs Engineering	
5.4	Fehr & Peers	
5.5	HDR Inc	5-4
5.6	LSA Associates. Inc.	
5.7	Leighton Consulting Inc	5-5
5.8	Sapphos Environmental Inc	5-5
59	Paleo Solutions Inc	5-5
5.10	Terry A Haves Associates Inc	5-6
5.11	Tatsumi & Partners Inc	5-6
CHAPTER 6	DISTRIBUTION LIST	6-1
61	Federal Agencies	6-1
6.2	State Agencies	6-1
6.3	Regional Agencies	6-2
6.4	County Agencies	6-2
6.5	Local Agencies	6-3
0.0	6.5.1 Tustin	6-3
	6.5.2 Santa Ana	6-3
	653 Orange	6-3
	654 Anaheim	6-3
	6.5.5 County of Orange	
	6.5.6 Districts	6-3
	657 Libraries	6-3
6.6	Federal Legislators	
67	State Legislators	
6.8	Local Elected Officials	
6.0	Interested Groups Organizations and Individuals	
0.7	morested Groups, Organizations, and marviduals	

6.10	Utilities	, Services, and Businesses	
	6.10.1	Electricity	6-6
	6.10.2	Gas	
	6.10.3	Refuse Services	6-6
	6.10.4	Telecommunications	
	6.10.5	Water	
	6.10.6	Sewer	

List of Appendices

- A Resources Evaluated Relative to the Requirements Of Section 4(F)
- B Title VI Policy Statement
- C Avoidance, Minimization, and/or Mitigation Summary
- D References
- E List of Technical Studies
- F Response to Comments
- G FHWA Air Quality Conformity Determination Letter

List of Figures

Figure 1.1-1. Project Location and Vicinity Map	1-2
Figure 1.2-1. SR 55 (I-5 to SR 91) Freeway Lane Configurations Peak Hour and Daily Traffic	
Volumes: Existing Conditions	1-4
Figure 1.2-2. Mainline LOS Exhibit	1-6
Figure 1.3-1. Build Alternative (Preferred Alternative) 1 of 9	1-27
Figure 1.3-1. Build Alternative (Preferred Alternative) 2 of 9	1-28
Figure 1.3-1. Build Alternative (Preferred Alternative) 3 of 9	1-29
Figure 1.3-1. Build Alternative (Preferred Alternative) 4 of 9	
Figure 1.3-1. Build Alternative (Preferred Alternative) 5 of 9	1-31
Figure 1.3-1. Build Alternative (Preferred Alternative) 6 of 9	1-32
Figure 1.3-1. Build Alternative (Preferred Alternative) 7 of 9	1-33
Figure 1.3-1. Build Alternative (Preferred Alternative) 8 of 9	1-34
Figure 1.3-1. Build Alternative (Preferred Alternative) 9 of 9	1-35
Figure 2.1-1. Land Use Study Area	2.1-2
Figure 2.3-1. Census Tracts Adjacent to Project Alignment	2.3-2
Figure 2.5-1. Study Corridor	2.5-3
Figure 2.5-2. Peak Hour and Daily Traffic Volumes - Existing Conditions	2.5-9
Figure 2.5-3a. Peak Hour Intersection Volumes – Existing (2017) Conditions	2.5-10
Figure 2.5-3b. Peak-Hour Intersection Volumes – Existing (2017) Conditions	2.5-11
Figure 2.5-4. Peak Hour and Daily Traffic Volumes - Opening Year (2035) No Build	2.5-23
Figure 2.5-5a. Peak Hour Intersection Volumes - Opening Year (2035) No Build Conditions	2.5-24
Figure 2.5-5b. Peak Hour Intersection Volumes - Opening Year (2035) No Build Conditions	2.5-25
Figure 2.5-6. Peak Hour and Daily Traffic Volumes - Opening Year (2035) Build	2.5-26
Figure 2.5-7a. Peak Hour Intersection Volumes - Opening Year (2035) Build Conditions	2.5-27
Figure 2.5-7b. Peak Hour Intersection Volumes - Opening Year (2035) Build Conditions	2.5-28
Figure 2.5-8. Peak Hour and Daily Traffic Volumes- Design Year (2055) No Build	2.5-29
Figure 2.5-9a. Peak Hour Intersection Volumes - Design Year (2055) No Build Conditions	2.5-30
Figure 2.5-9b. Peak Hour Intersection Volumes - Design Year (2055) No Build Conditions	2.5-31
Figure 2.5-10. Peak Hour and Daily Traffic Volumes- Design Year (2055) Build Conditions	2.5-32
Figure 2.5-11a. Peak Hour Intersection Volumes - Design Year (2055) Build Conditions	2.5-33
Figure 2.5-11b. Peak Hour Intersection Volumes - Design Year (2055) Build Conditions	2.5-34

Figure 2.6-1. Key View 1	2.6-3
Figure 2.6-2. Key View 2	2.6-4
Figure 2.6-3. Key View 3	2.6-5
Figure 2.6-4. Key View 4	2.6-6
Figure 2.8-1. Santiago Creek Watershed	2.8-2
Figure 2.8-2. FEMA FIRM Panel: 06059C0277J	2.8-3
Figure 2.8-3. FEMA FIRM Panel: 06059C0164J	2.8-4
Figure 2.8-4. FEMA FIRM Panel: 06059C0162J	2.8-5
Figure 2.8-5. FEMA FIRM Panel: 06059C0154J	2.8-6
Figure 2.8-6. FEMA FIRM Panel: 06059C0152J	2.8-7
Figure 2.10-1. Regional Fault Map	2.10-4
Figure 2.10-2. Seismic Hazard Map	2.10-6
Figure 2.11-1. Project Geologic Map (1 of 3)	2.11-3
Figure 2.11-1. Project Geologic Map (2 of 3)	2.11-4
Figure 2.11-1. Project Geologic Map (3 of 3)	2.11-5
Figure 2.13-1. Map of Sensitive Land Uses Along the Northern Project Corridor (1 of 4)	2.13-9
Figure 2.13-1. Map of Sensitive Land Uses Along the Mid-Northern Project Corridor (2 of	4)2.13-10
Figure 2.13-1. Map of Sensitive Land Uses Along the Mid-Southern Project Corridor (3 of	4)2.13-11
Figure 2.13-1. Map of Sensitive Land Uses Along the Southern Project Corridor (4 of 4)	2.13-12
Figure 2.14-1. Noise Levels of Common Activities	2.14-3
Figure 2.14-2. Long-term 24-hour Noise Level Measurement at LT-1	2.14-15
Figure 2.14-3. Long-term 24-hour Noise Level Measurement at LT-2	2.14-16
Figure 2.14-4. Long-term 24-hour Noise Level Measurement at LT-3	2.14-17
Figure 2.14-5. Long-term 24-hour Noise Level Measurement at LT-4	2.14-19
Figure 2.14-6. Long-term 24-hour Noise Level Measurement at LT-5	2.14-20
Figure 2.14-7. Long-term 24-hour Noise Level Measurement at LT-6	2.14-21
Figure 2.14-8. Long-term 24-hour Noise Level Measurement at LT-7	2.14-22
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 1 of 21)	2.14-23
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 2 of 21)	2.14-25
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 3 of 21)	2.14-27
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 4 of 21)	2.14-29
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 5 of 21)	2.14-31
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 6 of 21)	2.14-33
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 7 of 21)	2.14-35
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 8 of 21)	2.14-37
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 9 of 21)	2.14-39
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 10 of 21)	2.14-41
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 11 of 21)	2.14-43
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 12 of 21)	2.14-45
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 13 of 21)	
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 14 of 21)	2.14-49
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 15 of 21)	
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 16 of 21)	2.14-53
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 17 of 21)	2.14-55
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 18 of 21)	2.14-57
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 19 of 21)	
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 20 of 21)	2.14-61
Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 21 of 21)	
Figure 2.14-10. Location of Noise Barrier No. 1.1	
Figure 2.15-1. Vegetation Map $(1 \text{ of } 9)$.	
Figure 2.15-1. Vegetation Map (2 of 9)	
rigure 2.13-1. Vegetation Map (3 of 9)	2.13-3

Figure 2.15-1. Vegetation Map (5 of 9) 2.15-7 Figure 2.15-1. Vegetation Map (6 of 9) 2.15-8 Figure 2.15-1. Vegetation Map (7 of 9) 2.15-9 Figure 2.15-1. Vegetation Map (8 of 9) 2.15-10 Figure 2.15-1. Vegetation Map (9 of 9) 2.15-10 Figure 2.15-1. Vegetation Map (9 of 9) 2.15-10 Figure 2.16-1. Aquatic Features (1 of 9) 2.16-5 Figure 2.16-1. Aquatic Features (2 of 9) 2.16-5 Figure 2.16-1. Aquatic Features (3 of 9) 2.16-7 Figure 2.16-1. Aquatic Features (3 of 9) 2.16-7 Figure 2.16-1. Aquatic Features (4 of 9) 2.16-8 Figure 2.16-1. Aquatic Features (5 of 9) 2.16-9 Figure 2.16-1. Aquatic Features (6 of 9) 2.16-10 Figure 2.16-1. Aquatic Features (6 of 9) 2.16-10 Figure 2.16-1. Aquatic Features (8 of 9) 2.16-12 Figure 2.16-1. Aquatic Features (9 of 9) 2.16-12 Figure 2.16-1. Aquatic Features (9 of 9) 2.16-12 Figure 2.16-1. Aquatic Features (9 of 9) 2.16-13 Figure 2.17-1. CNDDB Occurrences of Special Status Species 2.17-2 Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions 3-49 Figure 3.2-2. California 2016 Greenhouse Gas Emissions	Figure 2.15-1. Vegetation Map (4 of 9)	2.15-6
Figure 2.15-1. Vegetation Map (6 of 9) 2.15-8 Figure 2.15-1. Vegetation Map (7 of 9) 2.15-9 Figure 2.15-1. Vegetation Map (8 of 9) 2.15-10 Figure 2.15-1. Vegetation Map (9 of 9) 2.15-11 Figure 2.16-1. Aquatic Features (1 of 9) 2.16-5 Figure 2.16-1. Aquatic Features (2 of 9) 2.16-6 Figure 2.16-1. Aquatic Features (3 of 9) 2.16-7 Figure 2.16-1. Aquatic Features (3 of 9) 2.16-8 Figure 2.16-1. Aquatic Features (5 of 9) 2.16-9 Figure 2.16-1. Aquatic Features (5 of 9) 2.16-10 Figure 2.16-1. Aquatic Features (6 of 9) 2.16-10 Figure 2.16-1. Aquatic Features (7 of 9) 2.16-11 Figure 2.16-1. Aquatic Features (7 of 9) 2.16-12 Figure 2.16-1. Aquatic Features (8 of 9) 2.16-12 Figure 2.16-1. Aquatic Features (9 of 9) 2.16-12 Figure 2.16-1. Aquatic Features (9 of 9) 2.16-13 Figure 2.17-1. CNDDB Occurrences of Special Status Species 2.17-2 Figure 3.2-1.1. Fuel Economy by Speed (Based on Studies from 1973, 1984, 1997, 2012, and Autonomies Modeling) 2.21-3 Figure 3.2-2. California 2016 Greenhouse Gas Emissions 3-39 Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Si	Figure 2.15-1. Vegetation Map (5 of 9)	2.15-7
Figure 2.15-1. Vegetation Map (7 of 9)2.15-9Figure 2.15-1. Vegetation Map (8 of 9)2.15-10Figure 2.15-1. Vegetation Map (9 of 9)2.15-11Figure 2.16-1. Aquatic Features (1 of 9)2.16-5Figure 2.16-1. Aquatic Features (2 of 9)2.16-6Figure 2.16-1. Aquatic Features (3 of 9)2.16-7Figure 2.16-1. Aquatic Features (4 of 9)2.16-8Figure 2.16-1. Aquatic Features (5 of 9)2.16-9Figure 2.16-1. Aquatic Features (6 of 9)2.16-10Figure 2.16-1. Aquatic Features (6 of 9)2.16-10Figure 2.16-1. Aquatic Features (7 of 9)2.16-10Figure 2.16-1. Aquatic Features (8 of 9)2.16-12Figure 2.16-1. Aquatic Features (9 of 9)2.16-13Figure 2.16-1. Aquatic Features (9 of 9)2.16-13Figure 2.17-1. CNDDB Occurrences of Special Status Species2.17-2Figure 2.18-1. Project Structure Locations2.18-3Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions3-39Figure 3.2-2. California 2016 Greenhouse Gas Emissions3-40Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 20003-40Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO2 Emissions3-44Figure 3.2-5. California Climate Strategy3-49	Figure 2.15-1. Vegetation Map (6 of 9)	2.15-8
Figure 2.15-1. Vegetation Map (8 of 9) 2.15-10 Figure 2.15-1. Vegetation Map (9 of 9) 2.15-11 Figure 2.16-1. Aquatic Features (1 of 9) 2.16-5 Figure 2.16-1. Aquatic Features (2 of 9) 2.16-6 Figure 2.16-1. Aquatic Features (3 of 9) 2.16-7 Figure 2.16-1. Aquatic Features (3 of 9) 2.16-7 Figure 2.16-1. Aquatic Features (5 of 9) 2.16-8 Figure 2.16-1. Aquatic Features (5 of 9) 2.16-9 Figure 2.16-1. Aquatic Features (6 of 9) 2.16-10 Figure 2.16-1. Aquatic Features (6 of 9) 2.16-10 Figure 2.16-1. Aquatic Features (7 of 9) 2.16-10 Figure 2.16-1. Aquatic Features (8 of 9) 2.16-12 Figure 2.16-1. Aquatic Features (9 of 9) 2.16-13 Figure 2.16-1. Aquatic Features (9 of 9) 2.16-13 Figure 2.17-1. CNDDB Occurrences of Special Status Species 2.17-2 Figure 2.18-1. Project Structure Locations 2.18-3 Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions 3-39 Figure 3.2-2. California 2016 Greenhouse Gas Emissions 3-40 Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 2000 3-40 Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO ₂ Emissio	Figure 2.15-1. Vegetation Map (7 of 9)	2.15-9
Figure 2.15-1. Vegetation Map (9 of 9)2.15-11Figure 2.16-1. Aquatic Features (1 of 9)2.16-5Figure 2.16-1. Aquatic Features (2 of 9)2.16-6Figure 2.16-1. Aquatic Features (3 of 9)2.16-7Figure 2.16-1. Aquatic Features (4 of 9)2.16-7Figure 2.16-1. Aquatic Features (5 of 9)2.16-9Figure 2.16-1. Aquatic Features (6 of 9)2.16-10Figure 2.16-1. Aquatic Features (7 of 9)2.16-10Figure 2.16-1. Aquatic Features (8 of 9)2.16-12Figure 2.16-1. Aquatic Features (8 of 9)2.16-13Figure 2.16-1. Aquatic Features (9 of 9)2.16-13Figure 2.17-1. CNDDB Occurrences of Special Status Species2.17-2Figure 2.18-1. Project Structure Locations2.18-3Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions3-39Figure 3.2-2. California 2016 Greenhouse Gas Emissions3-40Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 20003-40Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO2 Emissions3-49Figure 3.2-5. California Climate Strategy3-49	Figure 2.15-1. Vegetation Map (8 of 9)	2.15-10
Figure 2.16-1. Aquatic Features (1 of 9)2.16-5Figure 2.16-1. Aquatic Features (2 of 9)2.16-6Figure 2.16-1. Aquatic Features (3 of 9)2.16-7Figure 2.16-1. Aquatic Features (4 of 9)2.16-7Figure 2.16-1. Aquatic Features (5 of 9)2.16-8Figure 2.16-1. Aquatic Features (5 of 9)2.16-9Figure 2.16-1. Aquatic Features (6 of 9)2.16-10Figure 2.16-1. Aquatic Features (6 of 9)2.16-10Figure 2.16-1. Aquatic Features (7 of 9)2.16-11Figure 2.16-1. Aquatic Features (8 of 9)2.16-12Figure 2.16-1. Aquatic Features (9 of 9)2.16-13Figure 2.16-1. Aquatic Features (9 of 9)2.16-13Figure 2.17-1. CNDDB Occurrences of Special Status Species2.17-2Figure 2.18-1. Project Structure Locations2.18-3Figure 2.21-1. Fuel Economy by Speed (Based on Studies from 1973, 1984, 1997, 2012, and Autonomies Modeling)2.21-3Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions3-39Figure 3.2-2. California 2016 Greenhouse Gas Emissions3-40Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 20003-40Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO2 Emissions3-44Figure 3.2-5. California Climate Strategy3-49	Figure 2.15-1. Vegetation Map (9 of 9)	2.15-11
Figure 2.16-1. Aquatic Features (2 of 9)2.16-6Figure 2.16-1. Aquatic Features (3 of 9)2.16-7Figure 2.16-1. Aquatic Features (4 of 9)2.16-7Figure 2.16-1. Aquatic Features (5 of 9)2.16-8Figure 2.16-1. Aquatic Features (6 of 9)2.16-10Figure 2.16-1. Aquatic Features (7 of 9)2.16-11Figure 2.16-1. Aquatic Features (8 of 9)2.16-12Figure 2.16-1. Aquatic Features (8 of 9)2.16-12Figure 2.16-1. Aquatic Features (9 of 9)2.16-13Figure 2.16-1. Aquatic Features (9 of 9)2.16-13Figure 2.17-1. CNDDB Occurrences of Special Status Species2.17-2Figure 2.18-1. Project Structure Locations2.18-3Figure 2.21-1. Fuel Economy by Speed (Based on Studies from 1973, 1984, 1997, 2012, and Autonomies Modeling)2.21-3Figure 3.2-2. California 2016 Greenhouse Gas Emissions3-39Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 20003-40Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO2 Emissions3-49Figure 3.2-5. California Climate Strategy3-49	Figure 2.16-1. Aquatic Features (1 of 9)	2.16-5
Figure 2.16-1. Aquatic Features (3 of 9)2.16-7Figure 2.16-1. Aquatic Features (4 of 9)2.16-8Figure 2.16-1. Aquatic Features (5 of 9)2.16-9Figure 2.16-1. Aquatic Features (6 of 9)2.16-10Figure 2.16-1. Aquatic Features (7 of 9)2.16-11Figure 2.16-1. Aquatic Features (8 of 9)2.16-12Figure 2.16-1. Aquatic Features (9 of 9)2.16-13Figure 2.16-1. Aquatic Features (9 of 9)2.16-13Figure 2.17-1. CNDDB Occurrences of Special Status Species2.17-2Figure 2.18-1. Project Structure Locations2.18-3Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions3-39Figure 3.2-2. California 2016 Greenhouse Gas Emissions3-40Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 20003-40Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO2 Emissions3-49	Figure 2.16-1. Aquatic Features (2 of 9)	2.16-6
Figure 2.16-1. Aquatic Features (4 of 9)2.16-8Figure 2.16-1. Aquatic Features (5 of 9)2.16-9Figure 2.16-1. Aquatic Features (6 of 9)2.16-10Figure 2.16-1. Aquatic Features (7 of 9)2.16-11Figure 2.16-1. Aquatic Features (8 of 9)2.16-12Figure 2.16-1. Aquatic Features (9 of 9)2.16-13Figure 2.17-1. CNDDB Occurrences of Special Status Species2.17-2Figure 2.18-1. Project Structure Locations2.18-3Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions3-39Figure 3.2-2. California 2016 Greenhouse Gas Emissions3-40Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO2 Emissions3-44Figure 3.2-5. California Climate Strategy3-49	Figure 2.16-1. Aquatic Features (3 of 9)	2.16-7
Figure 2.16-1. Aquatic Features (5 of 9).2.16-9Figure 2.16-1. Aquatic Features (6 of 9).2.16-10Figure 2.16-1. Aquatic Features (7 of 9).2.16-11Figure 2.16-1. Aquatic Features (8 of 9).2.16-12Figure 2.16-1. Aquatic Features (9 of 9).2.16-13Figure 2.17-1. CNDDB Occurrences of Special Status Species2.17-2Figure 2.18-1. Project Structure Locations2.18-3Figure 2.11. Fuel Economy by Speed (Based on Studies from 1973, 1984, 1997, 2012, and Autonomies Modeling)2.21-3Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions3-39Figure 3.2-2. California 2016 Greenhouse Gas Emissions3-40Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 20003-40Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO2 Emissions3-44Figure 3.2-5. California Climate Strategy3-49	Figure 2.16-1. Aquatic Features (4 of 9)	2.16-8
Figure 2.16-1. Aquatic Features (6 of 9)2.16-10Figure 2.16-1. Aquatic Features (7 of 9)2.16-11Figure 2.16-1. Aquatic Features (8 of 9)2.16-12Figure 2.16-1. Aquatic Features (9 of 9)2.16-13Figure 2.17-1. CNDDB Occurrences of Special Status Species2.17-2Figure 2.18-1. Project Structure Locations2.18-3Figure 2.21-1. Fuel Economy by Speed (Based on Studies from 1973, 1984, 1997, 2012, and Autonomies Modeling)2.21-3Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions3-39Figure 3.2-2. California 2016 Greenhouse Gas Emissions3-40Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 20003-40Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO2 Emissions3-44Figure 3.2-5. California Climate Strategy3-49	Figure 2.16-1. Aquatic Features (5 of 9)	2.16-9
Figure 2.16-1. Aquatic Features (7 of 9) 2.16-11 Figure 2.16-1. Aquatic Features (8 of 9) 2.16-12 Figure 2.16-1. Aquatic Features (9 of 9) 2.16-13 Figure 2.17-1. CNDDB Occurrences of Special Status Species 2.17-2 Figure 2.18-1. Project Structure Locations 2.18-3 Figure 3.2-1. Fuel Economy by Speed (Based on Studies from 1973, 1984, 1997, 2012, and Autonomies Modeling) 2.21-3 Figure 3.2-2. California 2016 Greenhouse Gas Emissions 3-39 Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 2000 3-40 Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO ₂ Emissions 3-44 Figure 3.2-5. California Climate Strategy 3-49	Figure 2.16-1. Aquatic Features (6 of 9)	2.16-10
Figure 2.16-1. Aquatic Features (8 of 9) 2.16-12 Figure 2.16-1. Aquatic Features (9 of 9) 2.16-13 Figure 2.17-1. CNDDB Occurrences of Special Status Species 2.17-2 Figure 2.18-1. Project Structure Locations 2.18-3 Figure 2.21-1. Fuel Economy by Speed (Based on Studies from 1973, 1984, 1997, 2012, and 2.21-3 Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions 3-39 Figure 3.2-2. California 2016 Greenhouse Gas Emissions 3-40 Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 2000 3-40 Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO ₂ Emissions 3-44 Figure 3.2-5. California Climate Strategy 3-49	Figure 2.16-1. Aquatic Features (7 of 9)	2.16-11
Figure 2.16-1. Aquatic Features (9 of 9) 2.16-13 Figure 2.17-1. CNDDB Occurrences of Special Status Species 2.17-2 Figure 2.18-1. Project Structure Locations 2.18-3 Figure 2.21-1. Fuel Economy by Speed (Based on Studies from 1973, 1984, 1997, 2012, and 2.17-3 Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions 3-39 Figure 3.2-2. California 2016 Greenhouse Gas Emissions 3-40 Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 2000 3-40 Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO ₂ Emissions 3-44 Figure 3.2-5. California Climate Strategy 3-49	Figure 2.16-1. Aquatic Features (8 of 9)	2.16-12
Figure 2.17-1. CNDDB Occurrences of Special Status Species 2.17-2 Figure 2.18-1. Project Structure Locations 2.18-3 Figure 2.21-1. Fuel Economy by Speed (Based on Studies from 1973, 1984, 1997, 2012, and Autonomies Modeling) 2.21-3 Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions 3-39 Figure 3.2-2. California 2016 Greenhouse Gas Emissions 3-40 Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 2000 3-40 Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO ₂ Emissions 3-44 Figure 3.2-5. California Climate Strategy 3-49	Figure 2.16-1. Aquatic Features (9 of 9)	2.16-13
Figure 2.18-1. Project Structure Locations 2.18-3 Figure 2.21-1. Fuel Economy by Speed (Based on Studies from 1973, 1984, 1997, 2012, and 2.21-3 Autonomies Modeling) 2.21-3 Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions 3-39 Figure 3.2-2. California 2016 Greenhouse Gas Emissions 3-40 Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 2000 3-40 Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO ₂ Emissions 3-44 Figure 3.2-5. California Climate Strategy 3-49	Figure 2.17-1. CNDDB Occurrences of Special Status Species	2.17-2
 Figure 2.21-1. Fuel Economy by Speed (Based on Studies from 1973, 1984, 1997, 2012, and Autonomies Modeling)	Figure 2.18-1. Project Structure Locations	2.18-3
Autonomies Modeling) 2.21-3 Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions 3-39 Figure 3.2-2. California 2016 Greenhouse Gas Emissions 3-40 Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 2000 3-40 Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO ₂ Emissions 3-44 Figure 3.2-5. California Climate Strategy 3-49	Figure 2.21-1. Fuel Economy by Speed (Based on Studies from 1973, 1984, 1997, 2012, and	
Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions 3-39 Figure 3.2-2. California 2016 Greenhouse Gas Emissions 3-40 Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 2000 3-40 Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO ₂ Emissions 3-44 Figure 3.2-5. California Climate Strategy 3-49	Autonomies Modeling)	2.21-3
Figure 3.2-2. California 2016 Greenhouse Gas Emissions	Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions	3-39
Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 2000	Figure 3.2-2. California 2016 Greenhouse Gas Emissions	3-40
Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO ₂ Emissions3-44 Figure 3.2-5. California Climate Strategy	Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 2000	3-40
Figure 3.2-5. California Climate Strategy	Figure 3.2-4. Possible Use of Traffic Operation Strategies in Reducing On-Road CO ₂ Emissions	3-44
0	Figure 3.2-5. California Climate Strategy	3-49

List of Tables

Table 1.2-1: SR 55 Mainline Volumes - 2017 (Existing) and No Build 2035 and 2055	1-7
Table 1.2-2a: SR 55 Traffic Northbound SR 55 Level of Service	1-8
Table 1.2-2b: SR 55 Traffic Southbound SR 55 Level of Service	1-9
Table 1.2-3: Travel Times and Speed - Existing (2017), No Build 2035 and No Build 2055	1-11
Table 1.2-4: SR 55 Collision Rate Summary (January 2012 through December 2014)	1-13
Table 1.2-5: SR 55 Collision Type Summary (January 2012 through December 2014)	1-17
Table 1.3-1: Summary of Existing Traffic Conditions	1-36
Table 1.3-2. Summary of Future No Build Traffic Conditions	1-37
Table 1.3-3: Summary of Alternatives and Impacts	1-38
Table 1.4-1: Permits and Approvals Needed	1-46
Table 2.1-1: General Plan Land Uses in the Land Use Analysis Study Area	2.1-1
Table 2.1-2: Consistency with State, Regional, and Local Plans and Programs	2.1-10
Table 2.3-1: Racial and Ethnic Demographics	2.3-4
Table 2.3-2: Household Income and Size	2.3-6
Table 2.3-3: Age Distribution	2.3-7
Table 2.3-4: Housing Profile	2.3-8
Table 2.3-5: Housing Tenure	2.3-9
Table 2.3-6: Transit Dependency	2.3-11
Table 2.3-7: Anticipated Temporary Construction Easements	2.3-14
Table 2.3-8: Median Household Income and Low-Income Population	2.3-16
Table 2.3-9: Racial Minority and Hispanic/Latino Populations	2.3-17
Table 2.5-1: Freeway LOS Threshold	2.5-6
Table 2.5-2: Intersection LOS Threshold	2.5-7
Table 2.5-3a: Existing Northbound SR 55 Freeway Operations	2.5-13

Table 2.5-3b: Existing Southbound SR 55 Freeway Operations	2.5-14
Table 2.5-4: Existing Intersection Operations	2.5-15
Table 2.5-5: Existing SR 55 Corridor Peak Hour Travel Time	2.5-16
Table 2.5-6: Existing SR 55 Systemwide Traffic Metrics	2.5-16
Table 2.5-7a: Opening Year 2035 Northbound SR 55 Freeway Operations AM Peak Hour	2.5-35
Table 2.5 7b: Opening Year 2035 Northbound SR 55 Freeway Operations PM Peak Hour	2.5-35
Table 2.5-7c: Opening Year 2035 Southbound SR 55 Freeway Operations AM Peak Hour	2.5-36
Table 2.5-7d: Opening Year 2035 Southbound SR 55 Freeway Operations PM Peak Hour	2.5-37
Table 2.5-8a: Opening Year 2035 Intersection Operations AM Peak Hour	2.5-38
Table 2.5-8b: Opening Year 2035 Intersection Operations PM Peak Hour	2.5-39
Table 2.5-9a: Opening Year 2035 SR 55 Corridor Peak Hour Travel Time AM Peak Hour	2.5-40
Table 2.5-9b: Opening Year 2035 SR 55 Corridor Peak Hour Travel Time PM Peak Hour	2.5-40
Table 2.5-10: Opening Year 2035 SR 55 Systemwide Traffic Metrics	2.5-40
Table 2.5-11a: Design Year 2055 Northbound SR 55 Freeway Operations AM Peak Hour	2.5-42
Table 2.5 11b: Design Year 2055 Northbound SR 55 Freeway Operations PM Peak Hour	2.5-43
Table 2.5-11c: Design Year 2055 Southbound SR 55 Freeway Operations AM Peak Hour	2.5-44
Table 2.5-11d: Design Year 2055 Southbound SR 55 Freeway Operations PM Peak Hour	2.5-45
Table 2.5-12a: Design Year 2055 Intersection Operations AM Peak Hour	2.5-46
Table 2.1-12b: Design Year 2055 Intersection Operations PM Peak Hour	2.5-47
Table 2.5-13a: Design Year 2055 SR 55 Corridor Peak Hour Travel Time AM Peak Hour	2.5-48
Table 2.5-13b: Design Year 2055 SR 55 Corridor Peak Hour Travel Time PM Peak Hour	2.5-48
Table 2.5-14: Design Year 2055 SR 55 Systemwide Traffic Metrics	2.5-48
Table 2.9-1: Beneficial Uses of Local Surface Waters	2.9-6
Table 2.9-2: Impact Type and Proposed Design for Concrete Ditch/Channels	2.9-9
Table 2.10-1: Deterministic Peak Ground Acceleration	2.10-3
Table 2.13-1: State and Federal Criteria Air Pollutant Standards, Effects, and Sources	2.13-4
Table 2.13-2: Status of SIPs Relevant to the Project Area	2.13-7
Table 2.13-3: Recent Air Pollutant Concentrations in the Project Area	2.13-7
Table 2.13-4: CO Hot-Spot Analysis Study Intersections Peak Hour Traffic Volumes	2.13-15
Table 2.13-5: Average 1-Hour Carbon Monoxide Concentrations in PPM in the Attainment	
Demonstration and in the Project Area	2.13-16
Table 2.13-6: Maximum Daily Emissions Generated by Construction Activities	2.13-19
Table 2.13-7: Summary of Comparative Emissions Analysis	2.13-22
Table 2.13-8: Summary of Comparative MSAT Emissions Analysis	2.13-24
Table 2.14-1: Activity Categories and Noise Abatement Criteria	2.14-2
Table 2.14-2: Short-Term Ambient Noise Monitoring Results	2.14-9
Table 2.14-3: Meteorological Conditions	2.14-14
Table 2.14-4: Long-Term 24-Hour Noise Level Measurement Results at 17272 Amaganset Way,	
Tustin, CA (LT-1)	2.14-14
Table 2.14-5: Long-Term 24-Hour Noise Level Measurement Results at 14291 Yorba Street,	
Tustin, CA (LT-2)	2.14-15
Table 2.14-6: Long-Term 24-Hour Noise Level Measurement Results at 13702 Marshall Lane,	
Tustin, CA (LT-3)	2.14-16
Table 2.14-7: Long-Term 24-Hour Noise Level Measurement Results at 13201 Marshall Lane,	
Tustin, CA (LT-4)	2.14-18
Table 2.14-8: Long-Term 24-Hour Noise Level Measurement Results at 828 South Breezy Way,	
Orange, CA (LT-5)	2.14-19
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Stre	eet,
Orange, CA (LT-6)	2.14-20
Table 2.14-10: Long-Term 24-Hour Noise Level Measurement Results at 3001 North Valleyview	
Street, Orange, CA (LT-7)	2.14-21
Table 2.14-11: Typical Construction Equipment Noise Levels	2.14-66

Table 2.14-12: Summary of Feasible Noise Barriers from the Noise Study Report	2.14-69
Table 2.15-1: Plants Observed within Study Area	2.15-12
Table 2.16-1: Temporary Drainage Impacts	2.16-14
Table 2.17-1: California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants	2.17-3
Table 2.17-2: NCCP/HCP Covered Plant Species	2.17-3
Table 2.18-1: NCCP/HCP Covered Animal Species	2.18-4
Table 2.19-1: Threatened and/or Endangered Species and Critical Habitat Potentially Occurring	or
Known to Occur in the Project Area and Effect Determinations	2.19-2
Table 2.20-1: Invasive Plant Species Within Study Area	2.20-1
Table 2.21-1: Annual VMT, Vehicle Percentages, and Operational Fuel Consumption	2.21-4
Table 2.21-2: Construction Fuel Consumption	2.21-5
Table 2.22-1: Cumulative Project List — Caltrans Projects on or Adjacent to SR-55	2.22-6
Table 3.1-1: Eligible Historical Resources	3-9
Table 3.2-1: Summary of Applicable Plans and Underlying Policies and Objectives	3-41
Table 3.2-2: AM and PM Peak-Hour Vehicle Hours of Delay	3-45
Table 3.2-3: Modeled Annual CO ₂ e Emissions and Vehicle Miles Traveled, by Alternative	3-46
Table 3.2-4: Modeled CO ₂ e Emissions – Construction	3-47
Table 4.2-1: Summary of Native American Consultation	4-5
Table 4.3-1: Summary of Comments by Type and Number	4-43
Table 4.3-2: Index List of Public Comments Received	4-44

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Chapter 1 Proposed Project

1.1 Introduction

California participated in the "Surface Transportation Project Delivery Pilot Program" (Pilot Program), pursuant to 23 United States Code (USC) 327, for more than five years, beginning July 1, 2007, and ending September 30, 2012. MAP-21 (Public Law 112-141), signed by President Obama on July 6, 2012, amended 23 USC 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, the California Department of Transportation ("Department") entered into a Memorandum of Understanding pursuant to 23 USC 327 (National Environmental Policy Act [NEPA] Assignment Memorandum of Understanding [MOU]) with the Federal Highway Administration (FHWA). The NEPA Assignment MOU became effective October 1, 2012, and was renewed on December 23, 2016, for a term of 5 years. In summary, the Department continues to assume FHWA responsibilities under NEPA and other federal environmental laws in the same manner as was assigned under the Pilot Program, with minor changes. With NEPA Assignment, FHWA assigned and the Department assumed all the United States Department of Transportation (USDOT) Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off the State Highway System within the State of California, except for certain categorical exclusions that FHWA assigned to the Department under the 23 USC 326 Categorical Exclusion Assignment MOU, projects excluded by definition, and specific project exclusions.

The California Department of Transportation (Caltrans) District 12, in cooperation with the Orange County Transportation Authority (OCTA), proposes to increase capacity on State Route (SR) 55 between Interstate (I-) 5 and SR 22 and provide operational improvement between SR 22 and SR 91 Post Miles 10.4 and R17.9, traversing the cities of Tustin, Santa Ana, Orange, and Anaheim in Orange County, California (Figure 1.1-1). Caltrans, as assigned by the FHWA, is the lead agency under NEPA and the lead agency under the California Environmental Quality Act (CEQA).

The proposed project is in the Southern California Association of Governments (SCAG) financially constrained 2016–2040 Regional Transportation Plan (RTP)/ Sustainable Communities Strategy (SCS), which was found to be conforming by the FHWA/Federal Transit Administration (FTA) on June 1, 2016. The project is also in the 2019 Federal Transportation Improvement Program (FTIP) (SCAG 2018a), which was found to be conforming by the FHWA/FTA on December 16, 2016: "Project ID: ORA131301 Description: SR 55 (I-5 TO SR 91) – ADD CAPACITY FROM I-5 TO SR 22 AND IMPROVE OPERATIONS FROM I-5 TO SR 91." Copies of the 2016 RTP/SCS and 2015 FTIP listings for the 2016 RTP/SCS and 2019 FTIP Project Listings for the proposed project are provided in Appendix A of the Air Quality Report.

1.1.1 Existing Facility

SR 55 is a major north-south freeway in central and coastal Orange County that extends from Finley Avenue, just south of SR 1 in the City of Newport Beach, to SR 91 in the City of Anaheim. SR 55 provides freeway to freeway connections with SR 73, I-405, I-5, SR 22, and SR 91. SR 55 is a main travel route to residential, commercial, and retail areas in central and coastal Orange County, John Wayne Airport (JWA), and beaches and tourist attractions in the coastal cities.



Figure 1.1-1. Project Location and Vicinity Map

SR 55 was originally constructed in 1962 as a four-lane freeway with two general purpose lanes in each direction. Over the next 10 years, one additional general purpose lane was added in each direction. In 1985, the median was paved, and the freeway was restriped to provide one highoccupancy vehicle (HOV) lane in each direction. In 1992, SR 55 was extended from Mesa Drive to 19th Street in Costa Mesa. HOV direct connectors were added at the I-5/SR 55 interchange to provide direct connection between I-5 and SR 55 HOV traffic. An additional general purpose lane was constructed in each direction between SR 22 and McFadden Avenue in 1995. Between 1996 and 2002, one additional general purpose lane was added in each direction between I-5 and SR 91. In 2005, HOV direct connectors were added at the I-405/SR 55 interchange to provide direct connection between SR 55 and I-405 HOV traffic.

In general, the project segment of SR 55 (I-5 to SR 91) currently consists of one HOV lane and three to five general purpose lanes in each direction as shown on Figure 1.2-1. Where feasible, HOV and auxiliary lanes are present in each direction. The existing HOV lanes on SR 55 are continuous access in both directions for the length of the project. Existing HOV lanes would be perpetuated as part of the proposed improvements. Five local interchanges are between I-5 and SR 91 on SR 55 at 4th Street/Irvine Boulevard, 17th Street, Chapman Avenue, Katella Avenue, and Lincoln Avenue. One freeway-to-freeway interchange is located at SR 22 between 17th Street and Chapman Avenue.

1.2 Purpose and Need

The project purpose is a set of objectives the project intends to meet. The project need is the transportation deficiency that the project was initiated to address.

1.2.1 Purpose

The proposed project would add general purpose lanes to SR 55 between I-5 and SR 22 and provide operational improvements on SR 55 between SR 22 and SR 91.

The purpose of the proposed action is to:

- Improve mobility and reduce congestion
- Increase freeway capacity
- Improve traffic operations

In furtherance of the project's purpose, additional project objectives are to minimize environment impacts and right-of-way impacts within the project limits.

1.2.2 Need

The study area currently operates at unacceptable Level of Service (LOS) during peak periods. Existing traffic volumes, traffic congestion, and travel delay along the SR 55 corridor are anticipated to grow as a result of forecasted increases in population, housing, and employment. Traffic operations along the corridor are impacted due to the following key factors/ issues:

- Limited lane capacity on SR 55 during AM and PM peak periods
- Inadequate weaving distances due to the close proximity of on- and off-ramps along the mainline



Figure 1.2-1. SR 55 (I-5 to SR 91) Freeway Lane Configurations Peak Hour and Daily Traffic Volumes: Existing Conditions

Source: Final Traffic Volume Report, State Route 55 (I-5 to SR-91) Widening Project (Fehr & Peers 2018)

1.2.2.1 Capacity, Transportation Demand, and Safety

Levels of Service

Freeway traffic flow can be defined in terms of LOS. For freeways, there are six defined LOS, ranging from LOS A to LOS F. LOS A represents free traffic flow with low traffic volumes and high speeds. LOS F results in forced flow operations at low speeds due to traffic volumes that exceed the capacity of the facility. As shown on Figure 1.2-2, traffic volumes on a facility such as SR 55 substantially affect flow conditions. Future average daily traffic (ADT) will increase approximately 8.5 percent between existing (2017) and future No Build (2055), and LOS will decrease as shown in Table 1.2-1.

Under existing (2017) conditions, the AM peak direction is southbound SR 55, which experiences significant congestion due to heavy commute traffic and operates under LOS E or F conditions at all the study locations on southbound SR 55 from SR 91 to I-5. During the PM peak hour, the peak direction northbound SR 55 also experiences severe congestion and operates at LOS E or F conditions, with observed multiple congestion hot spots on northbound SR 55 at 17th Street, SR 22 off-ramp (due to westbound SR 22 queue spillback), and SR 91 (due to eastbound SR 91 queue spillback).

Table 1.2-2a and Table 1.2-2b provide the LOS for the existing condition and the No Build Alternative in Opening Year 2035 and Horizon Year 2055 on the SR 55 mainline during the AM and PM peak hours. The poorest LOS (E and F) in 2017 occurred on southbound SR 55 in the AM peak hour and on northbound SR 55 in the PM peak hour.

Under the No Build Alternative in 2035 and 2055, the poorest LOS would still occur on southbound SR 55 in the AM peak hour and on northbound SR 55 in the PM peak hour. However, LOS in both the northbound and southbound other directions on SR 55 during peak hours would be degraded compared to existing 2017 conditions. As a result, without substantial improvements, a majority of the study segments on northbound and southbound SR 55 would operate at LOS E and F during AM and PM peak hours by 2035 and 2055.

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Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions				
	70	Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. No delays					
B		70	Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted. No delays				
C		67	Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful making lane changes. Minimal delays				
D		62	Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. Minimal delays				
E		53	Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. Significant delays				
F		<53	Very congested traffic with traffic jams, especially in areas where vehicles have to merge. Considerable delays				

Figure 1.2-2. Mainline LOS Exhibit

Location	2017 (Existing)- SOV AM	2017 (Existing)- SOV PM	2017 (Existing)- SOV ADT	2017 (Existing)- HOV AM	2017 (Existing)- HOV PM	2017 (Existing)- HOV ADT	2035 No Build - SOV AM	2035 No Build - SOV PM	2035 No Build - SOV ADT	2035 No Build - HOV AM	2035 No Build - HOV PM	2035 No Build - HOV ADT	2055 No Build - SOV AM	2055 No Build - SOV PM	2055 No Build - SOV ADT	2055 No Build - HOV AM	2055 No Build - HOV PM	2055 No Build - HOV ADT
NB 55 - South of I-5	9402	8408	138830	602	1201	10250	9740	9330	148650	650	1330	11260	10130	10360	159720	700	1480	12390
NB 55 - Irvine/4th St to 17th St	7771	8150	122050	457	1387	10810	8050	8530	127100	510	1490	11720	8310	9190	134150	580	1600	12780
NB 55 - 17th St to SR 22	8154	8775	131820	440	1236	10090	8410	9150	136730	490	1300	10780	8650	9760	143350	570	1400	11860
NB 55 - SR 22 to Chapman Ave	7847	8860	135300	483	1331	11630	8030	8860	136780	530	1370	12180	8210	8720	137110	600	1460	13210
NB 55 - Chapman to Katella Ave	7343	7485	118230	512	1375	12300	7570	7590	120880	570	1410	12910	7790	7600	122710	720	1530	14670
NB 55 – Katella Ave to Meats Ave	6892	6428	107920	564	1398	12950	7170	6550	111160	630	1460	13790	7740	6930	118860	660	1430	13790
NB 55 – Meats Ave to Lincoln Ave	6892	6428	107920	564	1398	12950	7170	6550	111160	630	1460	13790	7380	6460	112130	660	1430	13790
NB 55 - Lincoln Ave to SR 91	7709	8020	127440	0	0	0	8150	8220	132630	0	0	0	8440	8080	133850	0	0	0
SB 55 - SR 91 to Lincoln Ave	7666	6967	110620	0	0	0	7910	7430	115960	0	0	0	7900	7670	117700	0	0	0
SB 55 – Lincoln Ave to Meats Ave	6684	6979	109240	1079	492	7560	6890	7390	114170	1120	570	8130	6950	7820	118090	1090	590	8080
SB 55 - Meats Ave to Katella Ave	6684	6979	109240	1079	492	7560	6890	7390	114170	1120	570	8130	7560	8290	126730	1090	590	8080
SB 55 – Katella Ave to Chapman Ave	6260	7685	115440	1329	558	8960	6420	8020	119540	1330	630	9310	6620	8380	124170	1470	850	11020
SB 55 - Chapman Ave to SR 22	6466	8183	121260	1182	661	9180	6410	8520	123590	1220	730	9710	6400	8860	126320	1310	880	10910
SB 55 - SR 22 to 17th St	5694	7903	111040	1471	887	11010	5920	8240	115640	1490	960	11440	6280	8600	121520	1540	1080	12230
SB 55 - 17th St to 4th St	5895	7725	112900	1475	892	10870	6040	8070	116960	1630	970	11940	6230	8460	121770	1820	1080	13320
SB 55 - South of I-5	8282	9177	140150	1552	729	11390	8650	9620	146660	1700	810	12530	8990	10110	153320	1870	930	13980

Table 1.2-1: SR 55 Mainline Volumes - 2017 (Existing) and No Build 2035 and 2055

Notes: ADT: average daily traffic; Ave: Avenue; HOV: high-occupancy vehicle; I-: Interstate; NB: northbound; SB: southbound; SOV; single-occupancy vehicle; SR: State Route; St: Street Source: Final Traffic Volume Report, State Route 55 (I-5 to SR-91) Widening Project (Fehr & Peers 2018a)

Northbound SR 55 Operations Location	Туре	Existing (2017) AM Peak Hour Density	Existing (2017) AM Peak Hour LOS	Existing (2017) PM Peak Hour Density	Existing (2017) PM Peak Hour LOS	No Build (2035) AM Peak Hour Density	No Build (2035) AM Peak Hour LOS	No Build (2035) PM Peak Hour Density	No Build (2035) PM Peak Hour LOS	No Build (2055) AM Peak Hour Density	No Build (2055) AM Peak Hour LOS	No Build (2055) PM Peak Hour Density	No Build (2055) PM Peak Hour LOS
SR 55 NB: Irvine Blvd off-ramp	Diverge	36.6	E	86.5	F	56	F	91	F	51	F	91	F
SR 55 NB: NB I-5 on-ramp merge	Merge	37.2	E	111.1	F	68	F	119	F	52	F	123	F
SR 55 NB: Irvine Blvd on-ramp to 17th St off-ramp	Weave	32.1	E	86.3	F	33	D	89	F	33	D	92	F
SR 55 NB: 17th St EB on-ramp	Merge	46.1	F	103.6	F	60	F	107	F	45	F	104	F
SR 55 NB: 17th St WB on-ramp to SR 22 off-ramp	Weave	28.1	D	70.8	F	28	С	76	F	31	D	74	F
SR 55 NB: Chapman Ave Bypass off-ramp	Diverge	32.1	D	36.8	E	31	D	74	F	55	E	83	F
SR 55 NB: SR 22 on-ramp to Chapman Ave off-ramp	Weave	23.9	С	55.1	F	23	С	89	F	69	F	107	F
SR 55 NB: Chapman Ave WB off-ramp	Diverge	25.8	С	54.2	F	25	С	82	F	85	F	97	F
SR 55 NB: Chapman Ave on-ramp	Merge	23.8	С	77.6	F	24	С	102	F	107	F	110	F
SR 55 NB: Chapman Ave on-ramp to Katella Ave off- ramp	Basic	22.8	С	77	F	27	С	89	F	98	F	95	F
SR 55 NB: Katella Ave off-ramp	Diverge	24	С	78	F	49	F	87	F	87	F	92	F
SR 55 NB: Katella Ave EB on-ramp	Merge	27.4	С	111.8	F	85	F	118	F	102	F	135	F
SR 55 NB: Katella Ave WB on-ramp	Merge	36.8	Е	104	F	77	F	111	F	84	F	116	F
SR 55 NB: Meats Ave off-ramp	Diverge	*	*	*	*	*	*	*	*	56	F	105	F
SR 55 NB: Meats Ave on-ramp to Lincoln Ave off-ramp	Weave	*	*	*	*	*	*	*	*	64	F	90	F
SR 55 NB: Katella Ave WB on-ramp to Lincoln Ave off- ramp	Basic	32.9	D	68.9	F	55	F	72	F	*	*	*	*
SR 55 NB: Lincoln Ave off-ramp	Diverge	37.8	E	70.8	F	54	F	83	F	*	*	*	*
SR 55 NB: Lane Drop to Lincoln Ave on-ramp	Basic	34.4	D	74.6	F	34	D	75	F	40	E	79	F
SR 55 NB: Lincoln Ave on-ramp to SR 91 off-ramp	Weave	25.6	С	89.3	F	27	С	82	F	36.4	E	85	F

Table 1.2-2a: SR 55 Traffic Northbound SR 55 Level of Service

Notes: Ave: Avenue; Blvd: Boulevard; EB: eastbound; I-: Interstate; LOS: level of service; NB: northbound; SB: southbound; SR: State Route; St: Street; WB: westbound 1) Density is reported in vehicles per hour per lane.

2) Bold font indicates unacceptable LOS E or F conditions.
 Source: Final Traffic Volume Report, State Route 55 (I-5 to SR-91) Widening Project (Fehr & Peers 2018a)

Southbound SR 55 Operations Location	Туре	Existing (2017) AM Peak Hour Density	Existing (2017) AM Peak Hour LOS	Existing (2017) PM Peak Hour Density	Existing (2017) PM Peak Hour LOS	No Build (2035) AM Peak Hour Density	No Build (2035) AM Peak Hour LOS	No Build (2035) PM Peak Hour Density	No Build (2035) PM Peak Hour LOS	No Build (2055) AM Peak Hour Density	No Build (2055) AM Peak Hour LOS	No Build (2055) PM Peak Hour Density	No Build (2055) PM Peak Hour LOS
SR 55 SB: SR 91 on-ramp to Lincoln Ave off-ramp	Weave	37.1	E	26.7	С	67	F	29	D	97	F	30	D
SR 55 SB: Lincoln Ave on-ramp	Merge	82.5	F	40.4	E	55	F	45	F	*	*	*	*
SR 55 SB: Lincoln Ave on-ramp to Katella Ave off-ramp	Basic	72.5	F	26.6	С	48	F	28	С	*	*	*	*
SR 55 SB: Katella Ave off-ramp	Diverge	78.2	F	26.2	С	60	F	27	С	*	*	*	*
SR 55 SB: Lincoln Ave on-ramp to Meats Ave off-ramp	Weave	*	*	*	*	*	*	*	*	94	F	30	D
SR 55 SB: Meats Ave on-ramp to Katella Ave off-ramp	Weave	*	*	*	*	*	*	*	*	99	E	30	D
SR 55 SB: Katella Ave on-ramp to Chapman Ave off-ramp	Weave	78.8	F	27.6	С	86	F	31	D	20	С	31	D
SR 55 SB: Chapman Ave WB on-ramp	Merge	63.3	F	27.1	С	32	D	37	E	23	С	39	E
SR 55 SB: Chapman Ave EB on-ramp	Merge	92.9	F	30.9	D	54	F	43	E	38	E	61	F
SR 55 SB: SR 22 off-ramp	Diverge	56.7	F	44.6	F	35	E	47	F	31	D	64	F
SR 55 SB: SR 22 on-ramp	Merge	147	F	25.8	С	120	F	33	D	129	F	27	С
SR 55 SB: 17th St WB off-ramp	Diverge	125.5	F	28.8	D	102	F	33	D	110	F	31`	D
SR 55 SB: 17th St EB off-ramp	Diverge	90.1	F	31.5	D	86	F	35	D	91	F	37	E
SR 55 SB: 17th St on-ramp to 4th St off-ramp	Weave	95.4	F	39.1	E	79	F	45	F	80	F	50	F
SR 55 SB: SB I-5 off-ramp	Diverge	65.8	F	41.6	E	58	F	45	F	61	F	46	F
SR 55 SB: 4th St on-ramp	Merge	44.2	F	24.7	С	21	С	26	С	21	С	27	С

Table 1.2-2b: SR 55 Traffic Southbound SR 55 Level of Service

Notes: Ave: Avenue; Blvd: Boulevard; EB: eastbound; I-: Interstate; LOS: level of service; NB: northbound; SB: southbound; SR: State Route; St: Street; WB: westbound

Density is reported in vehicles per hour per lane.
 Bold font indicates unacceptable LOS E or F conditions.
 Source: *Final Traffic Volume Report, State Route 55 (I-5 to SR-91) Widening Project* (Fehr & Peers 2018a)

SR 55 (I-5 to SR 91) Initial Study/Environmental Assessment

Travel Times

The LOS on freeways characterizes the performance of the freeway in terms of both travel times and speed. Table 1.2-3 summarizes the peak-hour travel times and speeds on northbound and southbound segments of SR 55 for existing conditions (2017) and the No Build Alternative in 2035 and 2055. There is strong directionality in the traffic volumes and congestion between the AM and PM peak hours and directions that are clearly reflected in the travel times and speeds. As shown in Table 1.2-3, the higher travel times and lower travel speeds in all three scenarios would occur on southbound SR 55 in the AM peak hour and northbound SR 55 in the PM peak hour.

Direction	Location	AM Peak Hour Travel Time (min:sec)	AM Peak Hour Speed (mph)	PM Peak Hour Travel Time (min:sec)	PM Peak Hour Speed (mph)				
2017 (Existing Conditions)									
NB SR 55	I-5 to SR 22	2:20	64	5:00	31				
NB SR 55	SR 22 to SR 91	4:20	64	9:50	29				
NB SR 55	I-5 to SR 91 (Total)	6:40	64	14:50	29				
SB SR 55	SR 91 to SR 22	9:50	29	4:30	64				
SB SR 55	SR 22 to I-5	8:00	19	2:30	62				
SB SR 55	SR 91 to I-5 (Total)	17:40	25	7:00	63				
2035 (No Bui	ld)								
NB SR 55	I-5 to SR 22	2:40	60	5:10	30				
NB SR 55	SR 22 to SR 91	5:40	51	12:00	24				
NB SR 55	I-5 to SR 91 (Total)	8:20	54	17:10	26				
SB SR 55	SR 91 to SR 22	9:40	30	4:50	60				
SB SR 55	SR 22 to I-5	5:10	29	2:50	54				
SB SR 55	SR 91 to I-5 (Total)	14:50	30	7:40	57				
2055 (No Bui	ld)								
NB SR 55	I-5 to SR 22	3:00	51	5:10	30				
NB SR 55	SR 22 to SR 91	9:30	30	12:50	22				
NB SR 55	I-5 to SR 91 (Total)	12:30	35	18:00	24				
SB SR 55	SR 91 to SR 22	10:40	27	5:00	57				
SB SR 55	SR 22 to I-5	6:20	24	3:00	51				
SB SR 55	SR 91 to I-5 (Total)	17:00	26	8:00	55				

Table 1.2-3: Travel Times and Speed – Existing (2017), No Build 2035 and No Build 2055

Notes: I-: Interstate; min: minutes; mph: miles per hour; NB: northbound; SB: southbound; sec: seconds; SR: State Route Source: *Final Traffic Operations Report, State Route 55 (I-5 to SR-91) Widening Project* (July 2018) (Fehr & Peers 2018b)

Accidents and Safety in the SR 55 Corridor

Accident data for the project segment of SR 55 were provided by Caltrans for the 3-year period from January 2012 to December 2014. Data was reviewed for mainline segments and ramps within the project limit (I-5 to SR 91). Table 1.2-4 shows the number of total accidents, fatalities, and injuries for both freeway mainline and ramps, as well as the actual 3-year accident rates with a comparison to the statewide average accident rates on similar facilities.

A total of 1,473 accidents with two fatalities and 490 injuries occurred in the study area between January 2012 and December 2014. A majority of the accidents (i.e., 78 percent) occurred on the SR 55 mainline, while the remaining 22 percent occurred at the on- and off-ramps. Southbound SR 55 had 907 accidents in total, 341 more accidents than the northbound direction. Accident rates at 24 out of 46 analyzed locations are higher than the statewide average for similar facilities. Among the 24 locations, the following 11 locations had accident rates as high as twice the statewide average rates (either fatalities accident rate, total fatalities and injuries accident rate, or total accident rate).

- Northbound SR 55 off-ramp to 4th Street (about 375 percent higher than for total fatalities and injuries accident rate and about 208 percent higher for total accident rate)
- Northbound SR 55 between First Street and 4th Street (about 950 percent higher for fatalities accident rate)
- Northbound SR 55 off-ramp to Chapman Avenue bypass (about 2,933 percent higher than for total fatalities and injuries accident rate and about 658 percent higher for total accident rate). Two accidents occurred at this off-ramp during the three-year period (January 2012 to December 2014); however, the accident rates were very high due to the low traffic volumes (e.g., the denominator for accident rate calculation) at this ramp.
- Northbound SR 55 on-ramp from Chapman Avenue (about 428 percent higher than for total fatalities and injuries accident rate and about 177 percent higher for total accident rate)
- Northbound SR 55 on-ramp from Katella Avenue (about 175 percent higher than for total fatalities and injuries accident rate)
- Southbound SR 55 off-ramp to westbound 17th Street (about 183 percent higher than for total fatalities and injuries accident rate and about 128 percent higher for total accident rate)
- Southbound SR 55 off-ramp to westbound SR 22 (about 192 percent higher than for total fatalities and injuries accident rate)
- Southbound SR 55 off-ramp to Chapman Avenue (about 279 percent higher than for total fatalities and injuries accident rate and about 132 percent higher for total accident rate)
- Southbound SR 55 on-ramp from Katella Avenue (about 109 percent higher than for total fatalities and injuries accident rate)
- Southbound SR 55 on-ramp from Lincoln Avenue (about 269 percent higher than for total fatalities and injuries accident rate)
- Southbound SR 55 off-ramp to Lincoln Avenue (about 317 percent higher than for total fatalities and injuries accident rate and about 224 percent higher for total accident rate)

Location	Post Mile	Number of Accidents Total	Number of Accidents Fatal	Number of Accidents Injury	Actual Accident Rates Fatal	Actual Accident Rates Fatal + Injury	Actual Accident Rates Total	Statewide Average Accident Rates Fatal	Statewide Average Accident Rates Fatal + Injury	Statewide Average Accident Rates Total
NB SR 55 between I-5 and First St	10.450-10.796	13	0	1	0	0.02	0.29	0.004	0.32	1.03
NB SR 55 Off 5/55 to 4th St	10.721	8	0	4	0	<u>0.38</u>	<u>0.77</u>	0.002	0.08	0.25
NB SR 55 First St and 4th St	10.797-10.978	19	1	5	<u>0.042</u>	0.25	0.8	0.004	0.31	1
NB SR 55 on-ramp from Northbound I-5	10.806	3	0	2	0	0.05	0.08	0.003	0.14	0.41
NB SR 55 between 4th and 17th St	10.979-11.784	65	0	14	0	0.12	0.57	0.004	0.03	1
NB SR 55 on-ramp from 4th St	11.094	5	0	2	0	0.16	0.41	0.002	0.22	0.63
NB SR 55 off-ramp to 17th St	11.604	19	0	6	0	0.22	0.69	0.003	0.35	1.01
NB SR 55 on-ramp from EB 17th St	11.744	2	0	1	0	0.16	0.32	0.002	0.21	0.73
NB SR 55 between 17th St and SR 22	11.785-12.966	76	1	32	0.001	0.2	0.47	0.003	0.28	0.95
NB SR 55 on-ramp from WB 17th St	12.001	2	0	2	0	<u>0.26</u>	0.26	0.003	0.18	0.57
NB SR 55 off-ramp to WB SR 22	12.733	7	0	4	0	0.13	0.23	0.004	0.16	0.49
NB SR 55 off-ramp to Chapman Ave Bypass	12.947	2	0	2	0	<u>1.82</u>	<u>1.82</u>	0.001	0.06	0.24
NB SR 55 between SR 22 and Chapman Ave	12.967-13.697	33	0	15	0	0.14	0.31	0.005	0.35	1.14
NB SR 55 on-ramp from EB SR 22	13.183	5	0	1	0	0.03	0.16	0.003	0.14	0.41
NB SR 55 off-ramp to EB Chapman Ave	13.555	10	0	7	0	<u>0.34</u>	0.48	0.004	0.24	0.75
NB SR 55 between Chapman Ave and Katella Ave	13.698-15.241	106	0	39	0	0.21	0.58	0.003	0.28	0.92
NB SR 55 off-ramp to WB Chapman Ave	13.758	7	0	4	0	<u>0.4</u>	0.7	0.003	-0.3	1.06
NB SR 55 on-ramp from Chapman Ave	13.898	20	0	12	0	<u>0.95</u>	<u>1.58</u>	0.003	0.18	0.57
NB SR 55 off-ramp to Katella Ave	15.108	18	0	5	0	0.21	0.76	0.003	0.35	1.01
NB SR 55 on-ramp from Katella Ave	15.222	11	0	6	0	<u>0.66</u>	<u>1.22</u>	0.003	0.24	0.72
NB SR 55 between Katella Ave and Lincoln Ave	15.242-16.980	114	0	38	0	0.19	0.56	0.004	0.28	0.92
NB SR 55 on-ramp from WB Katella Ave	15.477	1	0	0	0	0	0.43	0.003	0.18	0.57
NB SR 55 NB off-ramp to Lincoln Ave	16.823	13	0	2	0	0.15	<u>0.96</u>	0.003	0.24	0.84
NB SR 55 on-ramp from Lincoln Ave	16.956	7	0	3	0	<u>0.27</u>	0.62	0.002	0.21	0.73
NB SR 55 between I-5 and SR 91	10.450-17.875	566	2	207	0.002	0.17	0.51	0.004	0.3	0.99
SB SR 55 between I-5 and First St	10.450-10.796	30	0	1	0	0.24	0.66	0.004	0.32	1.03
SB SR 55 between First St and 4th St	10.797-10.978	25	0	7	0	0.29	<u>1.05</u>	0.004	0.31	1

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Table 1.2-4: SR 55 Collision Rate Summary (January 2012 through December 201	14)
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SR 55 (I-5 to SR 91) Initial Study/Environmental Assessment

Location	Post Mile	Number of Accidents Total	Number of Accidents Fatal	Number of Accidents Injury	Actual Accident Rates Fatal	Actual Accident Rates Fatal + Injury	Actual Accident Rates Total	Statewide Average Accident Rates Fatal	Statewide Average Accident Rates Fatal + Injury	Statewide Average Accident Rates Total
SB SR 55 on-ramp from 4th St	10.820	1	0	0	0	0	0.11	0.002	0.22	0.63
SB SR 55 between 4th St and 17th Street	10.979-11.784	118	0	35	0	<u>0.31</u>	<u>1.03</u>	0.004	0.3	1
SB SR 55 off-ramp to SB I-5	10.997	5	0	1	0	0.02	0.09	0.005	0.13	0.38
SB SR 55 off-ramp to 4th St	11.211	8	0	4	0	<u>0.43</u>	0.86	0.003	0.35	1.01
SB SR 55 on-ramp from 17th St	11.640	9	0	6	0	<u>0.31</u>	0.47	0.002	0.22	0.63
SB SR 55 off-ramp to EB 17th St	11.739	13	0	2	0	0.29	<u>1.87</u>	0.003	0.3	1.06
SB SR 55 between 17th St and SR 22	11.785-12.966	150	0	41	0	0.25	0.93	0.003	0.28	0.95
SB SR 55 off-ramp to WB 17th St	12.029	10	0	4	0	<u>0.68</u>	<u>1.71</u>	0.004	0.24	0.75
SB SR 55 on-ramp from EB SR 22	12.71	6	0	1	0	0.04	0.24	0.003	0.11	0.32
SB SR 55 between SR 22 and Chapman Ave	12.967-13.697	133	0	33	0	0.31	<u>1.26</u>	0.005	0.35	1.14
SB SR 55 off-ramp to WB SR 22	13.207	19	0	12	0	<u>0.38</u>	<u>0.61</u>	0.005	0.13	0.38
SB SR 55 on-ramp from EB Chapman Ave	13.578	3	0	1	0	0.08	0.23	0.003	0.18	0.57
SB SR 55 between Chapman Ave and Katella Ave	13.698-15.241	186	0	52	0	0.28	<u>1.02</u>	0.003	0.28	0.92
SB SR 55 on-ramp from WB Chapman Ave	13.754	10	0	3	0	0.18	0.59	0.002	0.21	0.73
SB SR 55 off-ramp to Chapman Ave	13.921	21	0	11	0	<u>0.91</u>	<u>1.74</u>	0.004	0.24	0.75
SB SR 55 on-ramp from Katella Ave	15.108	19	0	9	0	<u>0.46</u>	<u>0.97</u>	0.002	0.22	0.63
SB SR 55 between Katella Ave and Lincoln Ave	15.242-16.980	86	0	31	0	0.15	0.42	0.004	0.28	0.92
SB SR 55 off-ramp to Katella Ave	15.383	19	0	4	0	0.29	<u>1.38</u>	0.003	0.35	1.01
SB SR 55 on-ramp from Lincoln Ave	16.715	6	0	4	0	0.48	0.71	0.001	0.13	0.46
SB SR 55 off-ramp to Lincoln Ave	17.233	30	0	11	0	<u>1</u>	<u>2.72</u>	0.003	0.24	0.84
SB SR 55 between I-5 and SR 91	10.450-17.875	907	0	283	0	0.23	0.81	0.004	0.3	0.99

Notes: Ave: Avenue; EB: eastbound; I-: Interstate; NB: northbound; SB: southbound; SR: State Route; St: Street; WB westbound.

For mainline sections, the accident rate is the number of accidents per million vehicle-miles. For ramps, the accident rate is the number of accidents per million vehicles. Bold & underline indicates an actual accident rate that is higher than the average accident rate. Source: Caltrans District 12 TASAS Table B, 2017.

Table 1.2-5 summarizes the number of accidents by accident type on SR 55. Approximately 59 percent of the accidents on the SR 55 were rear-end collisions. Rear-end collisions are typically related to traffic congestion in chokepoint areas and are associated with sudden attempts to stop when traffic volumes exceed the capacity of the road. Additional key accident types were sideswipe (18 percent) and hit object (15 percent). The percentages of collision type were similar between northbound and southbound of the SR 55 study corridor, except that southbound SR 55 shows a larger share of rear-end accidents than the northbound direction. This corresponds to the longer travel time and heavier congestion on southbound SR 55 in comparison to northbound SR 55 during the peak periods.

As discussed in the Traffic Operation Analysis Report and Final Project Report, additional benefits of the proposed improvements in the SR 55 corridor would likely enhance safety and operations by decreasing traffic congestion and could reduce associated rear-end accidents in within the project area. The improvements would allow vehicles to merge easier throughout the corridor, thereby reducing sideswipe occurrences by giving drivers more time and space to merge with adjacent traffic. Increasing the lane widths would also improve the safety of the corridor by giving the drivers more space in which to operate their vehicles.
Location	Post Miles	Total Accidents	Rear-End	% Rear- End	Sideswipe	% Sideswipe	Hit Object	% Hit Object	Others ¹	% Other ¹
NB SR 55 between I-5 and First St	10.450- 10.796	13	7	54%	3	23%	3	23%	0	0%
NB SR 55 Off 5/55 to 4th St	10.721	8	3	38%	0	0%	2	25%	3	38%
NB SR 55 First St and 4th St	10.797- 10.978	19	9	47%	5	26%	4	21%	1	5%
NB SR 55 on-ramp from NB I-5	10.806	3	0	0%	1	33%	2	67%	0	0%
NB SR 55 between 4th and 17th St	10.979- 11.784	65	50	77%	6	9%	6	9%	3	5%
NB SR 55 on-ramp from 4th St	11.094	5	2	40%	1	20%	0	0%	2	40%
NB SR 55 off-ramp to 17th St	11.604	19	3	16%	3	16%	4	21%	9	47%
NB SR 55 on-ramp from EB 17th St	11.744	2	1	50%	0	0%	0	0%	1	50%
NB SR 55 between 17th St and SR 22	11.785- 12.966	76	45	59%	12	16%	12	16%	7	9%
NB SR 55 on-ramp from WB 17th St	12.001	2	0	0%	0	0%	1	50%	1	50%
NB SR 55 off-ramp to WB SR 22	12.733	7	2	29%	0	0%	5	71%	0	0%
NB SR 55 off-ramp to Chapman Ave Bypass	12.947	2	0	0%	0	0%	1	50%	1	50%
NB SR 55 between SR 22 and Chapman Ave	12.967- 13.697	33	15	45%	8	24%	8	24%	2	6%
NB SR 55 on-ramp from EB SR 22	13.183	5	3	60%	0	0%	2	40%	0	0%
NB SR 55 off-ramp to EB Chapman Ave	13.555	10	1	10%	1	10%	6	60%	2	20%
NB SR 55 between Chapman Ave and Katella Ave	13.698- 15.241	106	75	71%	17	16%	14	13%	0	0%
NB SR 55 off-ramp to WB Chapman Ave	13.758	7	3	43%	0	0%	2	29%	2	29%
NB SR 55 on-ramp from Chapman Ave	13.898	20	4	20%	5	25%	1	5%	10	50%
NB SR 55 off-ramp to Katella Ave	15.108	18	13	72%	3	17%	0	0%	2	11%

 Table 1.2-5: SR 55 Collision Type Summary (January 2012 through December 2014)

Location	Post Miles	Total Accidents	Rear-End	% Rear- End	Sideswipe	% Sideswipe	Hit Object	% Hit Object	Others ¹	% Other ¹
NB SR 55 on-ramp from Katella Ave	15.222	11	6	55%	2	18%	2	18%	1	9%
NB SR 55 between Katella Ave and Lincoln Ave	15.242- 16.980	114	64	56%	31	27%	13	11%	6	5%
NB SR 55 on-ramp from WB Katella Ave	15.477	1	1	100%	0	0%	0	0%	0	0%
NB SR 55 NB off-ramp to Lincoln Ave	16.823	13	3	23%	4	31%	3	15%	4	31%
NB SR 55 on-ramp from Lincoln Ave	16.956	7	0	62%	4	0%	1	0%	2	38%
NB SR 55 between I-5 and SR 91	10.450- 17.875	566	310	54%	106	19%	91	15%	59	10%
SB SR 55 between I-5 and First St	10.450- 10.796	30	19	63%	5	17%	6	20%	0	0%
SB SR 55 between First St and 4th St	10.797- 10.978	25	22	88%	2	8%	0	0%	1	4%
SB SR 55 on-ramp from 4th St	10.82	1	0	0%	1	100%	0	0%	0	0%
SB SR 55 between 4th and 17th St	10.979- 11.784	118	86	73%	22	19%	7	6%	3	3%
SB SR 55 off-ramp to SB I-5	10.997	5	2	40%	2	40%	1	20%	0	0%
SB SR 55 off-ramp to 4th St	11.211	8	2	25%	0	0%	0	0%	6	75%
SB SR 55 on-ramp from 17th St	11.64	9	4	44%	2	22%	0	0%	3	33%
SB SR 55 off-ramp to EB 17th St	11.739	13	0	0%	0	0%	9	69%	4	31%
SB SR 55 between 17th St and SR 22	11.785- 12.966	150	106	71%	30	20%	11	7%	3	2%
SB SR 55 off-ramp to WB 17th St	12.029	10	1	10%	0	0%	8	80%	1	10%
SB SR 55 on-ramp from EB SR 22	12.71	6	3	50%	1	17%	1	17%	1	17%
SB SR 55 between SR 22 and Chapman Ave	12.967- 13.697	133	102	77%	19	14%	9	7%	3	2%
SB SR 55 off-ramp to WB SR 22	13.207	19	5	26%	2	11%	9	47%	3	16%
SB SR 55 on-ramp from EB Chapman Ave	13.578	3	2	66%	0	0%	1	33%	0	0%

Location	Post Miles	Total Accidents	Rear-End	% Rear- End	Sideswipe	% Sideswipe	Hit Object	% Hit Object	Others ¹	% Other ¹
SB SR 55 between Chapman Ave and Katella Ave	13.698- 15.241	186	130	70%	32	17%	19	10%	5	3%
SB SR 55 on-ramp from WB Chapman Ave	13.754	10	4	40%	2	20%	4	40%	0	0%
SB SR 55 off-ramp to Chapman Ave	13.921	21	5	24%	3	14%	3	14%	10	48%
SB SR 55 on-ramp from Katella Ave	15.108	19	6	32%	6	32%	1	5%	6	32%
SB SR 55 between Katella Ave and Lincoln Ave	15.242- 16.980	86	37	43%	21	24%	25	29%	3	3%
SB SR 55 off-ramp to Katella Ave	15.383	19	12	63%	1	5%	2	11%	4	21%
SB SR 55 on-ramp from Lincoln Ave	16.715	6	2	33%	1	17%	0	0%	3	50%
SB SR 55 off-ramp to Lincoln Ave	17.233	30	12	40%	4	13%	10	33%	4	13%
SB SR 55 between I-5 and SR 91	10.450- 17.875	907	562	62%	156	17%	126	14%	63	7%

Notes

¹: Other accident types include head-on, broadside, overturn, auto-pedestrian and other collisions. Ave: Avenue; I-: Interstate; NB: northbound; SB: southbound; SR: State Route Source: Caltrans District 12 TASAS 2017 This page intentionally left blank

1.2.2.2 Roadway Deficiencies

The traffic congestion, delays, and reduced travel speeds currently experienced within the project segment of SR 55 are partly the result of existing nonstandard features that are not consistent with the Caltrans Highway Design Manual based on:

- Interchange spacing
- Intersection spacing
- Weaving length
- Standards for super elevation
- Shoulder width and horizontal clearance
- Access control and access rights
- Angle of intersection
- Successive exits
- Ramp and connector design standards

A full standard Build Alternative, with no mandatory or advisory design exceptions, was considered during the early planning studies for improvements to SR 55. The Project Development Team (PDT) determined that the full standard alternative would not be cost effective, would require extensive rebuild of the existing freeway, and would have extensive right-of-way and environmental impacts.

Based on the design development of the project, deficiencies would be corrected by designing and constructing to the standards in the Caltrans *Highway Design Manual* (Caltrans 2018a). At locations where right-of-way, environmental, or other constraints exist, design exceptions are being requested for this project, which are discussed in detail in Section 5.A.2.2 of the Draft Project Report and The Design Standards Design Document.

1.2.2.3 Social and Economic Demands

The number of jobs in Orange County combined with the lower housing costs of Riverside County contribute to the AM/PM directional split previously discussed in Section 1.2.2.1. A review of regional growth projections adopted by SCAG indicates that continuing growth is forecasted in the subregion served by SR 55 (SCAG 2016b). The population of Orange County is expected to increase from 3.1 million persons in 2012 to nearly 3.5 million persons in 2040, an increase of approximately 13 percent. Growth in Riverside County is projected to increase at a faster pace, with the population in that county projected to increase from 2.2 million in 2012 to 3.2 million in 2040, an increase of approximately 45 percent. This regional growth will continue to place a high demand on SR 55 by Orange and Riverside County residents traveling to jobs, retail, and other destinations in central and coastal Orange County.

The proposed project study area traverses the cities of Tustin, Santa Ana, Orange, and Anaheim, and unincorporated areas in Orange County, California (Figure 1.1-1). Population and employment growth within the study area is expected to take place through the natural increase and redevelopment of existing land uses or infill development of vacant parcels. Land uses within the study area are already established, with limited opportunity for a new unanticipated large-scale development.

The project is consistent with the state, regional, and local programs, plans, and policies, including the SCAG 2016-2040 RTP/SCS (2016b), OCTA 2018 Long Range Transportation Plan, OCTA 2015 Orange County Congestion Management Program, Orange County General Plan (2005), and general plans of the local jurisdictions that comprise the project study area. The roadway improvements associated with the project are anticipated to improve freeway capacity and travel times and accommodate existing and future travel demand in the corridor related to existing and planned growth approved by local jurisdictions.

1.2.2.4 Legislation

Measure M2

The SR 55 Improvement Project Between I-5 and SR 91 is part of a larger suite of transportation improvements included in Orange County's 30-year Measure M2 (M2) Plan. M2, the 0.5-cent transportation sales tax, planned to provide transportation improvements in Orange County through 2041 (2011 to 2041). M2 comprises the following transportation improvement programs: freeways, local streets and roads, and transit. Up to 43 percent of the funds is intended for freeway projects, 32 percent for streets, and 25 percent for transit projects.

In addition, two unique environmental programs, the Freeway Environmental Mitigation Program and Environmental Cleanup Program are part of M2. The Environmental Mitigation Program includes the allocation of funds to acquire land and fund restoration projects as part of the mitigation efforts and streamlined approval process for 13 M2 freeway improvement projects. To guide the restoration efforts, OCTA developed a Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP). The Environmental Mitigation Program receives 5 percent of the M2 funding for freeway projects. The Environmental Cleanup Program receives 2 percent of the overall M2 funds and aims to cleanup roadway runoff by funding local agencies' water quality improvement projects through a competitive grant program.

The M2 program was publicly reviewed through a Program Environmental Impact Report prior to voters approving the ballot measure in November 2006. Since 2008, the M2 program has been included in the SCAG RTP/SCS and the associated Program Environmental Impact Report prepared by SCAG (SCAG 2016d).

The Measure M2 Next 10 Delivery Plan provides guidance for what can be accomplished over the 10 years between 2017 and 2026 (OCTA 2018). The capacity and operational improvements of the proposed project are discussed in the Next 10 Delivery Plan as Project F.

OCTA Freeway Chokepoint Program

The OCTA Freeway Chokepoint Program was initiated in 2001 to support cooperative efforts with Caltrans to identify chronic freeway bottlenecks and to develop projects to remedy those identified deficiencies. As part of that program, freeway improvements were identified to alleviate localized freeway chokepoints. Funds for those projects were allocated from Measure M2 and other sources. The SR 55 Widening Project is included in the OCTA Freeway Chokepoint Program.

1.2.2.5 Modal Interrelationships and System Linkages

SR 55 is an integral component of the transportation system in Orange County. It provides a key linkage between the coastal areas in Newport Beach and other beach communities and cities along the corridor in central Orange County. SR 55 has interchanges with a number of other freeways, providing access to the countywide and regional freeway systems. The Build Alternative would enhance mobility in the SR 55 corridor, thereby improving mobility in this part of Orange County.

The Los Angeles to San Diego (LOSSAN) rail corridor, which is an important passenger and freight rail corridor that connects metropolitan areas from Los Angeles to San Diego, crosses SR 55 south of I-5, approximately 500 feet north of Edinger Avenue in the City of Santa Ana. Metrolink Inland Empire – Orange County Line also travels within the corridor but continues north parallel to SR 55, crossing SR 91 0.75 mile west of the SR 55/91 interchange. Train operations on this segment of the LOSSAN rail corridor include Amtrak's Pacific Surfliner intercity passenger rail service, the Southern California Regional Rail Authority Metrolink commuter rail service, and the Union Pacific Railroad and BNSF Railway freight rail services. SR 55 does not directly serve the Ports of Los Angeles and Long Beach or the rail transfer yards and is not a major corridor for goods movement in Southern California. However, SR 55 provides a connection to the Ports of Los Angeles and Long Beach via I-405, SR 22, and SR 91.

JWA is located south of the project area near SR 55 and I-405. JWA is immediately east of SR 55 and south of I-405. Direct access to JWA from SR 55 is via ramps from SR 55 southbound or northbound to southbound I-405. The Build Alternative would not modify or otherwise affect the existing access to/from JWA via SR 55.

Twelve OCTA bus routes operate on SR 55 within the project limits and arterials in the vicinity of SR 55: Route 42 on Lincoln Avenue, Routes 24 and 71 on Tustin Avenue; Route 167 on Meats Avenue; Route 46 on Taft Avenue; Route 50 on Katella Avenue; Route 54 on Chapman Avenue; Route 60 on 17th Street, Route 64 on First Street, and Routes 794 and 213.

The HOV lanes on SR 55 are used by private transit companies, taxis, carpools, and vanpools. All the transit and shared ride modes would continue to use SR 55 during the project construction and in the long term. OCTA will also continue to identify opportunities to improve transit services in the SR 55 corridor as part of its transit planning activities throughout Orange County. The capacity and operational improvements provided by the Build Alternative would support these transit and shared ride modes in the future.

1.2.2.6 Air Quality Improvements

Within the project corridor, HOV lanes and ramp metering have been incorporated into the SR 55 as transportation control measures. One HOV lane travels in both the northbound and southbound directions of SR 55 throughout the corridor. Existing on-ramps on SR 55 are metered; those ramps would continue to be metered under the Build Alternative. The Build Alternative would also maintain existing auxiliary lanes. These project features contribute to air quality emissions reductions in the long term. The Build Alternative will continue to directly benefit transit vehicles (and their passengers) traveling on existing HOV lanes. Carpool, vanpool, and bus services in the SR 55 corridor would benefit from the time savings as a result of using the existing HOV lanes.

OCTA offers several programs designed to encourage the use of alternate modes of transportation or more efficient use of vehicles. OCTA provides assistance in forming, joining, and managing ride-sharing and vanpool programs, in addition to providing commuter and local bus services and commuter rail services. Section 1.3.5.2 provides an overview on Transportation System Management (TSM), Transportation Demand Management (TDM), and multi-modal transportation strategies that would be provided in the SR 55 corridor area.

1.2.2.7 Independent Utility and Logical Termini

Federal regulations (23 Code of Federal Regulations [CFR] 771.111 [f]) require that "independent utility" and "logical termini" be established for a transportation improvement project evaluated under NEPA. The following discusses the specific criteria listed in 23 CFR 771.111(f) and how the SR 55 Improvement Project satisfies these criteria in separate analysis:

- a. Connect logical termini and be of sufficient length to address environmental matters on a broad scope
- b. Have independent utility or independent significance (be usable and require a reasonable expenditure event if no additional transportation improvements in the area are made)
- c. Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements

This Initial Study/Environmental Assessment (IS/EA) assesses the operational conditions on SR 55 between Post Mile 10.4 and R17.9. This area covers a segment of SR 55 through the cities of Tustin, Santa Ana, Orange, and Anaheim. The project is within an urban setting, including residential, commercial, and urban/industrial land uses. The approximately 7.5-mile-long corridor begins on SR 55 just south of I-5 at the southern end and terminates near the SR 55/SR 91 interchange in Anaheim. Both end points of the proposed project are at intersections with major regional transportation facility interchanges, which serve as logical points of termination. The project corridor is of sufficient length to adequately address the transportation issues that have been identified.

Logical Termini

"Logical termini" are required for project development to establish project boundaries that allow for a comprehensive response to transportation deficiency. Rational end points are required for transportation improvements and the review of environmental impacts. The need for improvements on SR 55 between I-5 and SR 91 is demonstrated by current extensive peakperiod congestion that is forecast to become worse over time. The project adequately addresses transportation needs on SR 55 and would not necessitate or rely on other projects to address the project's purpose and need.

Independent Utility

The proposed project satisfies FHWA's regulations for "independent utility" because it would not prevent the implementation of future transportation projects; and, independent of other actions, it would also provide benefits to SR 55 according to the project's purpose and need. This project would provide improvements to capacity by adding general purpose lanes between I-5 and SR 22 and operational improvements between SR 22 and SR 91 to address existing and

future traffic demand, address congestion, and enhance freeway operations. These benefits are a result of the proposed project and do not rely on completion of any other projects.

1.3 **Project Description**

This section describes the proposed action and the Build and No Build Alternatives developed to meet the purpose and need of the project while avoiding/minimizing environmental impacts. The project is located in Orange County on SR 55 between just south of the I-5/SR 55 interchange and the SR 55/SR 91 interchange (between Post Mile 10.4 and R17.9). The total length of the project is approximately 7.5 miles. Within the limits of the proposed project, SR 55 currently has three to five general purpose lanes and an HOV lane in each direction, with auxiliary lanes between ramps at various locations. The purpose of the proposed project is to provide additional capacity on SR 55 between I-5 and SR 22 and provide operational improvements between SR 22 and SR 91. These improvements will improve traffic operations and reduce congestion. The estimated construction cost for the build Alternative is approximately 90 million.

The Build and No Build Alternatives are evaluated in this environmental document and are described in this section. Additionally, this project contains a number of standardized project features which are employed on most, if not all, Caltrans projects and were not developed in response to any specific environmental impact resulting from the proposed project. These features are addressed in more detail in the Environmental Consequences sections found in Chapter 2. In addition, for the purposes of consistency, these project features are included in the Environmental Commitment Record (Appendix C: Avoidance, Minimization, and/or Mitigation Summary) and referenced in Chapter 2 of this IS/EA, as applicable, as Project Features (PF) (per title of subsection) and numbered. For example, a project feature applicable to Cultural Resources would be titled and listed as PF-CUL-1.

1.3.1 Build Alternative (Preferred Alternative)

The "Build Alternative" includes the following (Figure 1.3-1):

- One northbound general purpose lane between I-5 and SR 22
- One southbound general purpose lane between I-5 and SR 22
- Additional capacity on the southbound SR 55 Katella Avenue off- and on-ramps
- The southbound SR 55 Lincoln Avenue off-ramp relocated approximately 1,300 feet to the south

1.3.1.1 One northbound general purpose lane between I-5 and SR 22

A fifth general purpose lane would be extended on northbound SR 55 between 4th Street and Fairhaven Avenue, eliminating the existing lane drop at 4th Street. To accommodate the additional general purpose lane, the existing auxiliary lane from northbound 4th Street on-ramp to 17th Street, the existing northbound 17th Street loop on-ramp and the existing auxiliary lane from northbound 17th Street direct on-ramp would be realigned to the east to provide room for the fifth general purpose lane. One additional right-turn lane would also be added to the northbound 4th Street off ramp from SR 55. The fifth general purpose lane would become one of two lanes obligated to the westbound SR 22 connector. After the SR 22 connector, the northbound SR 55 will join the existing four general purpose lanes and one HOV lane.

1.3.1.2 One southbound general purpose lane between I-5 and SR 22

A fourth general purpose lane would be extended on southbound SR 55 from SR 22 to 4th Street, where it would become one of two obligated lanes to the I-5 southbound connector from SR 55. The existing two-lane eastbound SR 22 to southbound SR 55 connector would join the widened southbound SR 55 mainline as an auxiliary lane and additional general purpose lane. As a result, five general purpose lanes and one auxiliary lane would be present between Fairhaven Avenue and 4th Street. The auxiliary lane from the SR 22 connector would extend to the 17th Street loop off-ramp. The auxiliary lane from the 17th Street off-ramp continues to the 4th Street off-ramp, and the additional general purpose lane is an optional exit to 4th Street. The additional general purpose lane to become the second obligated lane to the southbound I-5 connector. The southbound 4th Street off-ramp from SR 55 would be widened with an extra right-turn lane to improve traffic flow.

1.3.1.3 Provide additional capacity on the southbound SR 55 Katella Avenue off- and on-ramps

An additional lane would be added to the southbound SR 55 Katella Avenue off- and on-ramps.

1.3.1.4 Relocate the southbound SR 55 Lincoln Avenue off-ramp approximately 1,300 feet to the south

The existing Lincoln Avenue southbound off-ramp will be relocated to south of Lincoln Avenue (next to the existing southbound hook on-ramp). This ramp relocation will provide operational improvements by increasing the weave length between the westbound SR 91 to southbound SR 55 connector and the Lincoln Avenue off-ramp. The Park and Ride lot would be relocated in-kind within Caltrans right-of-way to the existing southbound Lincoln Avenue off-ramp location.



Figure 1.3-1. Build Alternative (Preferred Alternative) 1 of 9



Figure 1.3-1. Build Alternative (Preferred Alternative) 2 of 9



Figure 1.3-1. Build Alternative (Preferred Alternative) 3 of 9



Figure 1.3-1. Build Alternative (Preferred Alternative) 4 of 9

1/22/2019



Figure 1.3-1. Build Alternative (Preferred Alternative) 5 of 9



1/22/2019



Figure 1.3-1. Build Alternative (Preferred Alternative) 6 of 9



Figure 1.3-1. Build Alternative (Preferred Alternative) 7 of 9



Figure 1.3-1. Build Alternative (Preferred Alternative) 8 of 9



Figure 1.3-1. Build Alternative (Preferred Alternative) 9 of 9

1.3.2 No Build Alternative

The No Build Alternative consists of those transportation projects that are already planned for construction by or before 2035 for the Opening Year analysis and 2055 for the Design Year analysis. Consequently, the No Build alternative represents future travel conditions in the SR 55 (I-5 to SR 91) Improvement Project study area without the SR 55 (I-5 to SR 91) Improvement Project.

The No Build Alternative would not meet the project purpose to improve mobility and decrease congestion. As shown in Table 1.3-1, generally, peak-hour speeds under existing conditions are substantially deteriorated relative to free flow traffic conditions, with average peak-hour speeds ranging from 39 to 52 miles per hour (mph).

Table 1.3-1 also shows vehicle average annual daily traffic (AADT) in the project area, including truck AADT and percentage for the existing and future No Build conditions. Future No Build conditions are forecasted for the project corridor segments between exit on- and off-ramps. As shown, generally, peak-hour speeds under the No Build Alternative, in 2035 and 2055, are substantially deteriorated relative to free flow traffic conditions with future average peak-hour speeds ranging from 28 to 53 mph.

Scenario/ Analysis Year	Location	AADT Total	AADT Truck	% Truck	VMT (mi)	Average Peak Speed (mph)	Average Off-Peak Speed (mph)
Baseline 2017	Irvine Blvd to 17th St NB	122,960	8,512	7.7%	60,918	41	64
Baseline 2017	Irvine Blvd to 17th St SB	121,550	7,818	7.7%	54,212	42	63
Baseline 2017	17th St to SR 22 NB	124,970	8,422	7.5%	76,849	40	64
Baseline 2017	17th St to SR 22 SB	126,910	8,074	7.5%	80,515	40	64
Baseline 2017	SR 22 to Chapman Ave NB	122,200	7,267	5.9%	29,784	52	65
Baseline 2017	SR 22 to Chapman Ave SB	134,220	7,460	5.9%	31,374	46	65
Baseline 2017	Chapman Ave to Katella Ave NB	123,220	7,557	5.9%	127,016	46	64
Baseline 2017	Chapman Ave to Katella Ave SB	118,410	6,669	5.9%	122,620	47	64
Baseline 2017	Katella Ave to Meats Ave NB	114,570	7,207	5.9%	65,493	44	64
Baseline 2017	Katella Ave to Meats Ave SB	109,320	6,188	5.9%	62,020	47	63
Baseline 2017	Meats Ave to Lincoln Ave NB	114,570	7,207	5.9%	61,515	44	64
Baseline 2017	Meats Ave to Lincoln Ave SB	109,320	6,188	5.9%	53,147	47	63
Baseline 2017	Lincoln Ave to SR 91 NB	116,950	7,793	5.9%	99,509	40	64
Baseline 2017	Lincoln Ave to SR 91 SB	115,540	7,298	5.9%	103,986	39	59

Table 1.3-1: Summary of Existing Traffic Conditions

Notes: %: percent; AADT: annual average daily traffic; Ave: Avenue; Blvd: Boulevard; I-: Interstate; mph: miles per hour; NB: northbound; SB: southbound; SR: State Route; VMT: vehicle miles traveled *Source:* Orange County Transportation Analysis Model, Version 4.0.

Scenario/ Analysis Year	Location	AADT Total	AADT Truck	% Truck	VMT (mi)	Average Peak Speed (mph)	Average Off-Peak Speed (mph)
No Build 2035	Irvine Blvd to 17th St NB	138,520	10,666	7.7%	65,076	36	64
No Build 2035	Irvine Blvd to 17th St SB	132,220	10,181	7.7%	57,825	37	61
No Build 2035	17th St to SR 22 NB	146,580	10,994	7.5%	81,595	36	64
No Build 2035	17th St to SR 22 SB	130,180	9,764	7.5%	85,320	34	60
No Build 2035	SR 22 to Chapman Ave NB	152,440	8,994	5.9%	31,225	52	64
No Build 2035	SR 22 to Chapman Ave SB	136,440	8,050	5.9%	32,628	37	59
No Build 2035	Chapman Ave to Katella Ave NB	137,530	8,114	5.9%	133,859	43	64
No Build 2035	Chapman Ave to Katella Ave SB	131,990	7,787	5.9%	129,370	44	62
No Build 2035	Katella Ave to Meats Ave NB	127,870	7,544	5.9%	69,979	40	64
No Build 2035	Katella Ave to Meats Ave SB	125,020	7,376	5.9%	66,345	43	61
No Build 2035	Meats Ave to Lincoln Ave NB	127,870	7,544	5.9%	68,022	42	64
No Build 2035	Meats Ave to Lincoln Ave SB	125,020	7,376	5.9%	56,862	43	61
No Build 2035	Lincoln Ave to SR 91 NB	135,310	7,983	5.9%	95,096	35	64
No Build 2035	Lincoln Ave to SR 91 SB	118,230	6,976	5.9%	90,647	28	54
No Build 2055	Irvine Blvd to 17th St NB	146,550	11,284	7.7%	70,651	37	63
No Build 2055	Irvine Blvd to 17th St SB	139,320	10,728	7.7%	62,208	37	61
No Build 2055	17th St to SR 22 NB	153,810	11,536	7.5%	88,300	36	63
No Build 2055	17th St to SR 22 SB	137,500	10,313	7.5%	91,516	34	60
No Build 2055	SR 22 to Chapman Ave NB	156,310	9,222	5.9%	33,161	53	64
No Build 2055	SR 22 to Chapman Ave SB	141,040	8,321	5.9%	34,691	37	59
No Build 2055	Chapman Ave to Katella Ave NB	143,680	8,477	5.9%	143,985	44	63
No Build 2055	Chapman Ave to Katella Ave SB	138,840	8,192	5.9%	140,101	44	62
No Build 2055	Katella Ave to Meats Ave NB	140,760	8,305	5.9%	82,007	42	62
No Build 2055	Katella Ave to Meats Ave SB	139,490	8,230	5.9%	77,837	38	59
No Build 2055	Meats Ave to Lincoln Ave NB	134,060	7,910	5.9%	78,495	44	63
No Build 2055	Meats Ave to Lincoln Ave SB	130,880	7,722	5.9%	61,490	44	61
No Build 2055	Lincoln Ave to SR 91 NB	143,250	8,452	5.9%	101,155	38	63
No Build 2055	Lincoln Ave to SR 91 SB	121,110	7,145	5.9%	95,090	30	55

Table 1.3-2. Summary of Future No Build Traffic Conditions

Notes: %: percent; AADT: annual average daily traffic; Ave: Avenue; Blvd: Boulevard; mph: miles per hour; NB: northbound; SB: southbound; SR: State Route; VMT: vehicle miles traveled

Source: Orange County Transportation Analysis Model, Version 4.0.

1.3.3 Comparison of Alternatives

Table 1.3-3 provides information for comparison of the Build and the No Build Alternatives. The table compares the impacts of building the project vs. not building the project. After the public circulation period, all comments were considered, and Caltrans selected a Preferred Alternative and made the final determination of the project's effect on the environment. Under CEQA, no unmitigable significant adverse impacts were identified, and Caltrans prepared a Negative Declaration or Mitigated Negative Declaration. Similarly, Caltrans, as assigned by the FHWA,

determined the NEPA action does not significantly impact the environment, so Caltrans issued a Finding of No Significant Impact.

Environmental Issue	No Build Alternative	Build Alternative (Preferred Alternative)
Project Features and Des	sign Standards	
Number of lanes	1 HOV, 3 to 5 general purpose, and auxiliary lanes provided at some locations	1 HOV, 4 to 5 general purpose, auxiliary lanes provided at some locations, an addition of new lane at the SB SR 55 Katella Avenue off- and on-ramps, and relocation of existing SB SR 55 Lincoln Avenue off-ramp
Travel lanes consistent with the Caltrans <i>Highway Design</i> <i>Manual</i> ?	No	Yes
Shoulders consistent with the Caltrans Highway Design Manual?	No	Yes
Horizontal clearances consistent with the Caltrans <i>Highway Design</i> <i>Manual</i> ?	No	Yes
Vertical clearances consistent with the Caltrans <i>Highway Design</i> <i>Manual</i> ?	Yes	Yes
Number of freeway segments operating at unacceptable LOS in AM/PM peak hours (out of a total 31 segments)	20/31 AM 23/31 PM	14/31 AM 19/31 PM
Number of Parcels Impacted	None	Temporary: 2 TCE. Permanent: No impacts.
Total Project Cost	None	\$148,162,000
Construction Duration	None	24 months
Potential Environmental	Impacts	
Land Use	No impact.	The Build Alternative is consistent with local, regional, and State plans.
Growth	No impact.	The Build Alternative would not influence the rate, type, or amount of growth and would not result in unplanned growth.
Community Impacts	No impact.	• Environmental Justice: low-income and minority populations would not be adversely affected.
Utilities and Emergency Services	No impact	 During construction, existing underground and overhead utility facilities could be affected and potentially require protection in-place, removal, or relocation. Temporary construction delays to emergency services may occur due to limited lane closures on mainline, ramp, and arterial roadways. During operation, improvements in traffic flow are likely to improve emergency response times within the Study Area; therefore, no permanent adverse effects would occur. No permanent adverse effects on utility providers or their
		facilities would occur.

Table 1.3-3: Summary of Alternatives and Impacts

Environmental Issue	No Build Alternative	Build Alternative (Preferred Alternative)
Traffic and Transportation/ Pedestrian and Bicycle Facilities	Long-term negative impact	 Temporary impacts to traffic circulation and pedestrian and bicycle access would occur during construction activities associated with the freeway improvements. The Build Alternative would improve traffic operational service and reduce congestion in the long term.
Visual/Aesthetics	No impact	 The Build Alternative would result in minimal temporary impacts to visual/aesthetics resources during construction. The Build Alternative would result in compatible visual characteristics to the existing project corridor; therefore, any permanent impacts to visual/aesthetics resources would be neutral.
Cultural Resources	No impact	 The Build Alternative would have the potential to encounter previously unidentified cultural resources during construction. There are no historic properties or archaeological resources identified within the Direct Area of Potential Effect (APE). However, two historic properties are located within the Indirect APE and were evaluated individually, and as potential contributors to a larger district, and determined that they did not qualify as potential contributors to the locally designated Old Town Tustin Historic District. These two properties were previously found individually eligible for listing in the National Register of Historic Places (NHRP) and this finding remains valid. These properties are not eligible for inclusion in the local historic district because they are located outside of the boundary established for the historic district and are physically separated by intervening modern infill construction and substantially altered historic buildings. The project would not result in a take or easement of these properties. Additionally, the properties. Three CEQA historical resources were identified in the project area and all are located within the Indirect APE. These resources include the two properties described above. The third property is within the same vicinity of the other two properties near the Old Town Tustin Historic District. The Build Alternatives would not directly impact the three CEQA historical resources identified in the project area. In the unlikely event that previously unidentified cultural materials are unearthed during construction, the implementation of PF-CUL-1 would avoid or minimize adverse impacts. Human remains are not anticipated within the APE. PF-CUL-2 will be implemented to address inadvertent discovery during site preparation, grading, or excavation. Therefore, permanent impacts to cultural resources would be less than significant.

Environmental Issue	No Build Alternative	Build Alternative (Preferred Alternative)
Hydrology and Floodplains	No impact	 Construction activities associated with the Build Alternative would occur primarily within Caltrans right-of-way. Drainage improvements would be limited to the dry season, would not reduce or otherwise affect the flood storage capacity, and would not modify flood flows. Therefore, no temporary adverse impacts would occur. The Build Alternative would include improvements that may require abandoning some drainage systems or adjusting some with respect to the finished grade. Others may conflict with proposed retaining walls and will be relocated. These impacts may be minimized or avoided by relocating, extending, and adjusting systems as necessary, as well as abandoning or removing systems which are no longer serviceable. No improvements that would change channel hydraulics or increase the risk of flooding and inundation would occur.
		Therefore, impacts to hydrology and floodplains are less than significant.
Water Quality and Stormwater Runoff	No impact	 Construction activities associated with the Build Alternative would disturb a total area of 15.65 ac. Implementation of required permits and preparation of a SWPPP and BMPs would result in no adverse impacts related to water quality and stormwater runoff during construction. The Build Alternative would increase the impervious surface area by 2.90 ac, thereby increasing the volume of runoff. Implementation of required permits and post-construction source control BMPs and treatment BMPs would result in no adverse impacts related to water quality and stormwater runoff during post-construction.
Geology/Soils/ Seismology/Topography	No impact	 The Build Alternative would result in temporary impacts to geology, soils, seismology, and topography during construction. The Build Alternative would not result in substantial long-term impacts to geology, soils, seismology, and topography.
Paleontology	No impact	 The Build Alternative would have the potential to encounter scientifically important paleontological resources during construction. The Build Alternative would have the potential to significantly impact paleontological resources during excavations into areas containing native Miocene, Pliocene, and Pleistocene sediments. Implementation of Mitigation Measures PALEO-1 and PALEO-2 would reduce impacts to paleontological resources or unique geologic features to less than significant.
Hazardous Waste/Materials	No impact	 With the implementation of project features PF-HAZ-1 through PF-HAZ-6, the Build Alternative would not result in temporary adverse impacts related to hazardous waste or materials. Operation would not result in adverse impacts related to hazardous waste or materials.

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Environmental Issue	No Build Alternative	Build Alternative (Preferred Alternative)
Air Quality	No impact	 During construction, emissions from construction equipment and activities would include CO, NO_x, VOCs, directly-emitted particulate matter (PM₁₀ and PM_{2.5}), soot particulate (PM₁₀ and PM_{2.5}), diesel exhaust particulate matter (PM₁₀ and PM_{2.5}), SO₂, dust, and odor.
		 The proposed project is not a project of air quality concern under 40 CFR 93.123(b)(1). FHWA conformity determination was obtained on February 25, 2020 (see Appendix G).
Noise	 No temporary noise impacts Potential long-term noise effects from traffic noise 	 The Build Alternative would result in temporary impacts during construction. The Build Alternative would not result in perceptible permanent increase in noise once the replacement noise barriers are constructed. The following noise barrier under the Build Alternative was determined to be reasonable and feasible: Noise Barrier No. 1.1. A noise barrier survey was sent to the property owner affected by Noise Barrier No. 1.1. The property owner stated they were not in favor of this noise barrier. Therefore, Noise Barrier No. 1.1 would not be constructed as part of this project.
Natural Communities	No impact	No impact.
Wetlands and Other Waters	No impact	 The Build Alternative would result in 0.19 acre of temporary impacts to CDFW and 0.09 acre to USACE jurisdiction. The Build Alternative would not result in any permanent impacts to waters of the United States or waters of the State.
Plant Species	No impact	No impact.
Animal Species	No impact	 Potential for temporary impacts during construction to bats and migratory birds. No long-term impacts.
Threatened and Endangered Species	No impact	No impact
Invasive Species	No impact	With the incorporation of environmental control measures, the Build Alternative would not result in adverse impacts related to invasive species.
Cumulative Impacts	No impact	Excavations into areas containing native Miocene, Pliocene, and Pleistocene sediments may result in significant impacts to paleontological resources. If other projects on or adjacent to SR 55 also require excavation within fossiliferous formations within the project limits, the project has potential to result in cumulatively considerable impacts to paleontological resources; however, the Build Alternative includes Mitigation Measures PALEO-1 and PALEO-2 to avoid and minimize or mitigate potential adverse impacts.
Climate Change	 No temporary impacts The No Build Alternative would result in a decrease in CO₂ emissions of 242.72 tons/day in 2030 and 225.67 tons/day in 2050 compared to existing conditions. 	 The Build Alternative would result in temporary increase of construction emissions. The Build Alternative would result in a decrease in CO₂ emissions of 4.96 tons/day in 2030 and an increase of 2.55 tons/day in 2050 compared to the No Build Alternative. The Build Alternative would result in a decrease in CO₂ emissions of 247.67 tons/day in 2030 and 223.12 tons/day in 2050 compared to existing conditions.
Wildfire	No impact.	No impact.

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ac: acre(s) BMPs: Best Management Practices CFR: Code of Federal Regulations CO2: carbon dioxide LOS: level(s) of service PM10: particulate matter less than 10 microns in size SO2: sulfur dioxide SWPPP: Storm Water Pollution Prevention Plan USACE: United States Army Corps of Engineers APE: Area of Potential Effects CDFW: California Department of Fish and Wildlife CO: carbon monoxide HOV: high-occupancy vehicle NOx: nitrogen oxides PM2.5: particulate matter less than 2.5 microns in size SR: state route TCE: temporary construction easement VOC: volatile organic compounds

1.3.4 Identification of the Preferred Alternative

This section discusses the comprehensive process in determining the Preferred Alternative for project construction. On December 11, 2019, the PDT recommended the Build Alternative as the Preferred Alternative, which includes the following improvements:

- One northbound general purpose lane between I-5 and SR 22
- One southbound general purpose lane between I-5 and SR 22
- Additional capacity on the southbound SR 55 Katella Avenue off- and on-ramps
- Relocate the southbound SR 55 Lincoln Avenue off-ramp approximately 1,300 feet to the south.

The PDT made their decision after considering all information in the Draft IS/EA and technical studies, as well as input from the PDT and public, including members of the public, project stakeholders, cooperating agencies, and participating agencies during the project development process. The Draft IS/EA for the project was circulated for public review and comments from September 30 to October 30, 2019. Extensive public outreach and coordination resulted in comments from the public and agencies, which were considered in the Preferred Alternative selection process. All issues noted in the public comments were given consideration in the Preferred Alternative selection process, including traffic safety and congestion, air pollution, and freeway noise.

Consideration was also given to the project purpose and need; the project's environmental, economic, and social impacts (described in Chapter 2); and the Preferred Alternative evaluation criteria, which weighed the following factors.

Build Alternative (Preferred Alternative)

- **Relieve Traffic Congestion** The Build Alternative would improve traffic operational service and reduce congestion in the long term.
- Improve SR 55 Freeway Operations By 2055, the Build Alternative would (1) improve traffic operational service level from LOS E or F to acceptable LOS D or better at various freeway segments, (2) reduce northbound and southbound SR 55 travel time, (3) and reduce the network vehicle-hours of delay while serving more vehicles through the network.
- **Improve Intersection Operations** The project would improve LOS from deficient LOS E or F under No Build to acceptable LOS D or better at seven intersections. Traffic operations improvements at these intersections would result from a combination of

various reasons, including additional capacity and/or operational improvements at intersections, traffic pattern changes at intersections, traffic congestion relief at adjacent freeway segments, and traffic congestion relief at adjacent ramp or local intersections.

- Alternative is consistent with regional plans The No Build Alternative is not consistent with adopted plans. The Build Alternative is generally consistent with adopted plans (including State Transportation Improvement Plan, RTP/SCS and SCAG FTIP). The project is included in both 2016 SCAG RTP and 2014 OCTA Long-Range transportation Plan (LRTP). In addition, it is also included in the latest 2018 OCTA LRTP. Since the project started in 2017, the traffic modeling in the traffic study used the constrained 2016 SCAG RTP. The project is also consistent with the OCTA Measure M2 Delivery Plan.
- **Public comments received** Written and court reporter transcribed public comments indicated that there were no public comments expressing support or opposition for the No Build Alternative. Seven public commenters noted support for the Build Alternative, with two in opposition. The public has demonstrated a preference for the Build Alternative over the No Build Alternative, based what was presented to the public. A total of 62 comments were received from the public hearing and circulation.

Based on these findings from the evaluation criteria, the PDT identified the Build Alternative as the Preferred Alternative.

1.3.5 Alternatives Considered but Eliminated from Further Discussion Prior to the "Draft" Initial Study/Environmental Assessment (IS/EA)

The project previously included additional alternatives described below. These alternatives were intended to improve operations within the project area; however, after consideration of Caltrans design standards, environmental impacts, right-of-way requirements, and traffic safety and operations, the alternatives (Design Options) described below were removed from further consideration.

1.3.5.1 Design Option A: First Street Southbound On-Ramp (New Connection)

Design Option A proposed to relocate the southbound I-5 connection from 4th Street southbound on-ramp to a new ramp from Tustin Avenue/First Street intersection. The new on-ramp would relieve traffic congestion on the 4th Street/Tustin Avenue intersection and the 4th Street/SR 55 southbound ramps intersection. The First Street (proposed) and 4th Street on-ramps would provide enough storage capacity per traffic analysis. Due to geometrical and spatial challenges the widening of the existing southbound I-5 connector was limited to the first frame of the structure. This limited distance required multiple non-standard features including vertical geometry, super elevation rates, entrance geometry, and outside shoulder; additionally, a 300foot auxiliary lane could not be accommodated. Furthermore, the proposed First Street on-ramp would introduce a partial interchange condition and would relocate an easily accessible return movement to the I-5 from 4th Street to First Street. After multiple meetings with Caltrans, FHWA and the affected cities, this design option was withdrawn from further evaluation and will not be included in the one build alternative.

1.3.5.2 Design Option B: Northbound 4th Street General Purpose Lane from SR 22 to Chapman Avenue

Design Option B proposed to extend the northbound 4th Street general purpose lane on SR 55 from SR 22 to Chapman Avenue. The added capacity due to the additional lane would slightly improve operations on the mainline; however, the consecutive lane drops near Chapman Avenue would result in challenging weaving maneuvers and exacerbate the operations of the weaving segment at this location. In addition, bridge widening above Santiago Creek would be required for this design option. Because all properties adjacent to SR 55 at Santiago Creek were previously part of a landfill and are currently an active site in the Department of Toxic Substance Control program, additional soil investigations of potentially previously contaminated properties would be needed. This design option would also require right-of-way impacts to approximately 22 properties along Jennifer Lane. Therefore, this design option was withdrawn from further evaluation and will not be included in the one build alternative.

1.3.5.3 Design Option C: Chapman Avenue Southbound Ramp Improvements

Design Option C proposed to improve weaving on the mainline by restricting traffic entering on the Chapman Avenue direct southbound SR 55 on-ramp to westbound SR 22 only and introducing a left turn pocket for traffic to enter the existing westbound Chapman Avenue loop on-ramp to southbound SR 55. Several different ramp restrictions were analyzed, including installing a concrete barrier and adding only signing and striping. Placing a concrete barrier would require 19 feet of right-of-way, 19 full parcel takes and 7 partial parcel takes, bridge widening, and possible abutment adjustments for La Veta Avenue. Several signing and striping restrictions were considered and were deemed difficult to enforce. This design option provided limited traffic benefits and would worsen existing operations on the Chapman Avenue and southbound SR 55 intersection. The significant delays from traffic waiting to turn left onto the loop ramp may impact access to local businesses. Similar to Design Option B, several properties around Santiago Creek were previously a landfill; and additional environmental investigation would be needed. Therefore, this design option was withdrawn from further evaluation and will not be included in the one build alternative.

1.3.5.4 Design Option D: Northbound Fifth General Purpose Lane from Lincoln Avenue to SR 91

Design Option D proposed to extend the Fifth Street general purpose lane on northbound SR 55 from Lincoln Avenue to SR 91. This design option would improve operations on the mainline. Extending the Fifth Street general purpose lane introduced weaving issues from the northbound Lincoln Avenue on-ramp attempting to merge onto the eastbound SR 91 connector. Removed access, limited access, and non-limited access to eastbound SR 91 were considered. Each design variation has different challenges. Some of these challenges included changes to traffic patterns resulting in impacts on local interchanges within and outside the project footprint. In the "removed access" design variation, a majority of the Lincoln Avenue on-ramp to eastbound SR 91 traffic would utilize Santiago Boulevard to Lakeview Avenue to get onto eastbound SR 91, further burdening the SR 91 and Lakeview Avenue interchange. For the "limited access" design variation, preliminary traffic analysis concluded minimal improvements would be seen to eastbound SR 91 and westbound SR 91. A "non-limited" access was not entertained by Caltrans due to limited weaving length between the on-ramp and SR 91 connectors. Additionally, a full standard design would have right-of-way impacts east of the northbound on-ramp and impact a

local business. After evaluating several design variations with Caltrans and the affected cities, Design Option D was withdrawn from further evaluation and will not be included in the one build alternative.

1.3.6 Other Alternatives Considered

1.3.6.1 Assembly Bill 2542 Reversible Lanes

Assembly Bill (AB) 2542 requires any state or local project that would increase automobile capacity or a highway realignment project approved by the California Transportation Commission to have considered reversible lanes in the design of the project.

FHWA guidance notes that "To warrant reversible lanes, peak-period traffic volumes should exhibit or anticipate to exhibit significant direction imbalance (e.g., 70/30 percent)." The FHWA guidance also requires that "If reversing a traffic lane is considered, the basic requirement is that off-peak traffic can be accommodated in the remaining lanes." Based on the project traffic volumes, SR 55 from I-5 to SR 91 currently and is anticipated in the future to exhibit a significant directional imbalance of peak-hour traffic volumes under present conditions. Should reversing a traffic lane be implemented, the remaining lanes cannot accommodate existing or future traffic volumes, as severe traffic congestion presently exists in both directions. No further consideration of reversible lanes is required.

1.3.6.2 Transportation Systems Management, Transportation Demand Management, and Transit Alternatives

Alternative travel modes were considered during the early planning studies for improvements to SR 55. TSM strives to maximize the efficiency of the existing system through operational modifications such as ridesharing, reversible lanes, ramp metering, and traffic signal optimization. The TSM strategy is to improve traffic flow and increase the number of vehicle trips without changing the number of through lanes on a road. TDM focuses on the demand side of travel behavior with regional strategies for reducing the number of vehicle trips and vehicle miles traveled and increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding the traveler's transportation choice through initiatives such as telecommuting and changing work schedules to produce a more even pattern of transportation network use, muting the effect of morning and evening rush hours. In addition, multi-modal transportation alternatives integrate multiple transportation modes, such as pedestrian, bicycle, automobile, rail, and mass transit.

TSM, TDM, and multi-modal transportation strategies have been and would continue to be provided in the SR 55 corridor area. As previously discussed, the existing on-ramps along the project segment of SR 55 are all currently metered. Several bus routes operate on SR 55 and the surrounding areas. The Build Alternative would maintain the existing ramp metering and would not permanently impact the bus lines. In addition, there is currently one HOV lane in each direction that operates with continuous access. TSM, TDM, and mass transit alternatives alone do not satisfy the proposed project purpose of improving both existing and future mobility; reducing congestion; and improving mainline weaving, merge, and diverge movements and would not fulfill OCTA's Freeway Chokepoint Program. As a result, these alternatives were withdrawn from further consideration and are not evaluated in detail in this IS/EA.

1.3.6.3 Full Standard Alternative

A full standard Build Alternative, with no mandatory or advisory design exceptions, was considered during the early planning studies for improvements to SR 55. A full standard alternative would not be cost effective, would require extensive rebuild of the existing freeway, and would have extensive right-of-way and environmental impacts. As a result, this alternative was withdrawn from further consideration and is not evaluated in detail in this IS/EA.

1.4 Permits and Approvals Needed

The proposed project is anticipated to require the permits, reviews, and approvals listed in Table 1.4-1.

Permit/Approval	Agency	Status
NPDES Construction General-Permit Order No. 2009-009-DWQ, NPDES No. CAS000003 (Section 402 of the CWA)	SWRCB	Application and Notice of Intent will be submitted prior to construction.
Santa Ana Region dewatering requirement Order No. R8-2015-0004 (NPDES No. CAG998001), Order No. R8-2007-0041, as amended by Order No. R8-2009-0045 (NPDES No. CAG918002), and general discharge permit Order No. R8-2009- 0045	SWRCB	If dewatering is required, the project should demonstrated that groundwater being discharged to surface waters does not contain pollutants of concern.
Caltrans NPDES Permit Order No. 2012-0011- DWQ No. CAS000002 (Section 402 of the CWA)	SWRCB	General discharge permit has already been issued for all discharges on Caltrans projects and the project must comply with the permit requirements.
Streambed Alteration Agreement (Fish and Game Code Section 1602)	California Department of Fish and Wildlife (CDFW)	OCTA/Caltrans will coordinate application with CDFW during Final Design.
Water Quality Certification (Section 401 of the CWA)	Santa Ana RWQCB	OCTA/Caltrans will coordinate application with RWQCB during Final Design.
Individual permit (Section 404 of the CWA)	USACE	OCTA/Caltrans will coordinate application with USACE during Final Design.
Construction Encroachment Permit	Caltrans District 12	Contractor will obtain Encroachment permit prior to construction.
Project Level Air Quality Conformity Approval Letter	FHWA	Interagency Consultation participants concurred that the project is not a Project of Air Quality Concern on May 22, 2018. FHWA conformity determination was obtained on February 25, 2020 (see Appendix G).

 Table 1.4-1: Permits and Approvals Needed

Notes: CWA: Clean Water Act; DWQ: Division of Water Quality; FHWA: Federal Highway Administration; NPDES: National Pollutant Discharge Elimination System; OCTA: Orange County Transportation Authority; RWQCB: Regional Water Quality Control Board; SWRCB: State Water Resources Control Board; USACE: United States Army Corps of Engineers.

Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

This chapter describes the current condition of the resources in the Study Area and identifies the potential effects of implementing the proposed project. Each subsection describes the present conditions, discusses the potential impacts of building the proposed project, and indicates what measures would be taken to avoid, minimize, or mitigate those impacts. The environmental analysis contained within the following chapter considers the potential environmental consequences associated with implementation of the Build and No Build Alternatives.

The environmental impact analyses discuss potential impacts in three general categories: human environment, physical environment, and biological environment. The following discussion of potential effects is presented by environmental resource area. As part of the scoping and environmental analysis carried out for the proposed project, the following environmental issues were considered, but no adverse impacts were identified. As a result, there is no further discussion about these issues in this document.

- Coastal Zone: California's Coastal Zone generally extends 1,000 yards inland from the mean high tide line. The Study Area is located approximately 4.0 miles from the Pacific Ocean and is not located within the Coastal Zone.
- Wild and Scenic Rivers: According to the National Wild and Scenic Rivers System, California has approximately 189,454 miles of river, of which 1,999.6 miles are designated as wild and scenic; none of which are located in Orange County, California.
- Farmlands/Timberlands: The project area is within Urban and Built Up Land. No land designated as prime farmland, unique farmland, or land of statewide or local importance is within the Study Area. In addition, no property currently under Williamson Act contract is within the Study Area.
- Parks and Recreation: The proposed project would have no effect on parks or recreation opportunities or access to parks or recreation facilities. Parks, recreation, and wildlife considered for the purpose of Section 4(f) are provided in Appendix A: Resources Evaluated Relative to the Requirements of Section 4(f). There is no potential for either temporary or permanent use of Section 4(f) eligible resources.

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HUMAN ENVIRONMENT

2.1 Land Use

This section is based on a review of local planning documents and geographic information systems land use data, as well as information from Section 2.3, Community Impacts, and Appendix A: Resources Evaluated Relative to the Requirements of Section 4(f).

2.1.1 Existing and Future Land Use

2.1.1.1 Land Use

The Study Area for the land use analysis is shown in Figure 2.1-1 and includes the proposed project area (the physical area that would be directly affected by the proposed project) and a 0.5-mile buffer around the proposed project to include the adjacent neighborhoods within the cities of Tustin, Santa Ana, Orange, and Anaheim, and unincorporated areas in the County of Orange.

General Plan land use designations, which guide future development in a jurisdiction, are also depicted on Figure 2.1-1. In the Study Area, the east side of SR 55 is dominated by single-family residential land uses, with some education, open space and recreation, and commercial and services land uses, while the west side of SR 55 contains a mix of single and multi-family residential, commercial and services, facilities, general office, and open space and recreation uses. The acreages and percentages of land uses in the Study Area are shown in Table 2.1-1.

SCAG 2012 General Plan Land Use	Acres	Percentage
Single Family Residential	1,059.96	49.2%
Multi-Family Residential	201.30	9.3%
Mobile Homes and Trailer Parks	23.12	1.1%
Mixed Residential	134.41	6.2%
General Commercial	51.60	2.4%
General Office Use	116.65	5.4%
Retail and Commercial and Services	325.42	15.1%
Public Facilities	58.66	2.7%
Education K-12	37.50	1.7%
Light Manufacturing	3.11	0.1%
Mixed Commercial and Industrial	0.56	0.0%
Mixed Residential and Commercial	56.57	2.6%
Open Space and Recreation	1.08	0.0%
Local Parks and Recreation	37.94	1.8%
Water	0.45	0.0%
Undevelopable or Protected Land	45.45	2.1%
Total	2,153.77	100.0%

Table 2.1-1: General Plan Land Uses in the Land Use Analysis Study Area

Source: SCAG (2012); compiled by Jacobs (2019).

Note: Percentages are based on the total acreage within the Study Area, approximately 2,153 acres. The land use categories above do not capture local roadways, and the local rights-of-way are not included in the sum of the "Acres" column.

SCAG: Southern California Association of Governments



Figure 2.1-1. Land Use Study Area

As indicated in Table 2.1-1, approximately 1,060 acres or approximately 49.2 percent of the Study Area consists of single family residential, which is the dominant land use type. As shown on Figure 2.1-1, single family residential occurs mostly on the east side of SR 55. Retail and Commercial Services and multifamily residential uses are the second and third most common land uses, respectively, in the Study Area.

2.1.1.2 Development Trends

The city of Tustin encompasses an area of 11.08 square miles and was incorporated in 1927 (City of Tustin 2017). The population of Tustin was 75,540 in 2010, as compared to 67,504 in 2000 (SCAG 2017b). With a population growth rate of approximately 7.4 percent expected to occur between 2012 and 2040, the city of Tustin is growing at a faster rate than Santa Ana. While the city of Tustin is growing, it is not yet built out. In the Housing Element of the General Plan 2013, the City of Tustin identified 192.45 acres of vacant land and 12.85 acres of underutilized land with development potential (City of Tustin 2013). The greatest potential for growth in Tustin lies in the redevelopment of the former Tustin Marine Corps Air Station, which will create new residential, commercial, and open space lands. According to SCAG (2017b) growth projections, the city of Tustin is projected to increase job growth by 76.6 percent from 2012 to 2040.

The city of Santa Ana encompasses an area of 27.3 square miles. Santa Ana was incorporated in 1886 and is the County Seat and the second largest city in Orange County (City of Santa Ana 2017). The population of Santa Ana was 324,528 in 2010, as compared to 337,977 in 2000 (SCAG 2017d). With an expected population growth of 4.2 percent between 2012 and 2040, the city of Santa Ana is growing at a slower rate than the cities of Orange and Tustin in the Study Area. Because Santa Ana has limited vacant land available for development, most new development involves the redevelopment of underdeveloped or previously improved parcels (City of Santa Ana 1998). The city of Santa Ana is experiencing increased traffic congestion as a result of growth and increased development in Santa Ana and surrounding cities (City of Santa Ana 1998). According to SCAG (2017d) growth projections, the city of Santa Ana is projected to increase job growth by 7.2 percent from 2012 to 2040.

The city of Orange encompasses an area of 37.19 square miles and was incorporated in 1888 (City of Orange 2015). The population of Orange was 139,279 in 2014, as compared to 128,868 in 2000 (SCAG 2017a). With a population growth rate of approximately 27.5 percent expected to occur between 2008 and 2030 (City of Orange 2015), the city of Orange is growing at a faster rate than Santa Ana and Tustin. While the city of Orange is growing, it is not yet built out. The greatest potential for growth in Orange lies east of Jamboree Road in currently undeveloped areas. According to SCAG (2015a) growth projections, the City of Orange is projected to increase job growth by 12.1 percent from 2012 to 2040.

The city of Anaheim encompasses an area of approximately 50 square miles and was incorporated in 1876 (City of Anaheim 2004). The population of Anaheim was 358,136 in 2016, as compared to 328,014 in 2000 (SCAG 2017a). With a population growth rate of approximately 16.8 percent expected to occur between 2012 and 2040 (SCAG 2015b), the city of Anaheim is growing at a faster rate than Tustin and Santa Ana but at a slower rate than Orange. The City of Anaheim does not present much opportunity for future development, as the city is almost completely developed. Most future development plans are associated with improving transportation and redevelopment of existing facilities (City of Anaheim 2004). According to

SCAG (2015b) growth projections, the city of Tustin is projected to increase job growth by 38.0 percent from 2012 to 2040.

The unincorporated areas in the County of Orange encompass an area of 321 square miles and was formed as a county in 1889 (County of Orange 2012). The population of the County of Orange unincorporated areas was 129,278 in 2018, as compared to 168,132 in 2000 (SCAG 2019), showing a decrease. With a population growth rate of approximately 49.2 percent expected to occur between 2012 and 2040 (SCAG 2015b), the County of Orange is growing at a faster rate than all the cities within the study area. The County of Orange went through several annexations and incorporations within the last 30 years, resulting in a loss of over 60,000 acres of unincorporated territory. Consequently, a far greater portion of new residential development in the County of Orange will take place within cities than in the past. As only one major new planned community (The Ranch Plan Planned Community) will be developed in the southernmost unincorporated area, the County of Orange will also continue to place major emphasis on infill development strategies in the urbanized unincorporated areas of the County of Orange is projected to increase job growth by 99 percent from 2012 to 2040.

2.1.2 Consistency with State, Regional, and Local Plans and Programs

This section discusses the project's consistency with the SCAG 2016-2040 RTP/SCS, the SCAG 2019 FTIP, OCTA Measure M Renewal Ordinance, the OCTA M2020 Plan (2012), the OCTA LRTP (2014), and the General Plans of the Cities of Tustin, Santa Ana, and Orange, and the County of Orange.

2.1.2.1 SCAG Regional Transportation Plan/Sustainable Communities Strategy

SCAG is the Metropolitan Planning Organization for six counties and 187 cities. SCAG prepares long-range planning documents guiding responses to regional challenges in the areas of transportation, air quality, housing, growth, hazardous waste, and water quality. Because these issues cross city and county boundaries, SCAG works with cities, counties, and public agencies in the six-county region (i.e., Los Angeles, Orange, Ventura, San Bernardino, Riverside, and Imperial Counties) to develop strategies to specifically address the growth and transportation issues facing Southern California.

The 2016-2040 RTP/SCS was adopted by SCAG on April 2016 and last amended (Amendment No. 1) in January 2017. SCAG's 2016-2040 RTP/SCS places a greater emphasis on sustainability and integrated planning than previous RTPs and defines three principles that guide future development in the six-county region: mobility, economy, and sustainability. SCAG updates the RTP/SCS every 4 years. Improvements to SR 55, including the proposed project (FTIP ORA131301), are listed in the 2016-2040 financially constrained RTP/SCS.

2.1.2.2 SCAG Federal Transportation Improvement Program

The FTIP is a listing of all capital transportation projects proposed over a 6-year period for the SCAG region. The FTIP is prepared to implement the projects and programs listed in the RTP and is developed in compliance with State and federal requirements. A new FTIP is prepared and approved every 2 years. These funded projects include highway improvements; transit, rail, and
bus facilities; carpool lanes; signal synchronization; intersection improvements; freeway ramps; and other related improvements.

Federal law requires that all federally funded projects and regionally significant projects (regardless of funding) must be listed in an FTIP. Improvements to SR 55, including the proposed project (FTIP ORA131301), are listed in the 2019 FTIP (SCAG 2016a).

2.1.2.3 Measure M Renewal Ordinance

In 1990, Orange County voters approved Measure M, a 0.5-cent sales tax for transportation improvements that was scheduled to sunset in 2011. On November 7, 2006, the County's voters renewed Measure M for a 30-year extension through 2041 and approved a continuation of transportation improvements through the Measure M Transportation Investment Plan (M2). By the year 2041, the M2 program plans to deliver approximately \$15.5 billion worth of transportation improvements to Orange County. Major improvement plans target Orange County freeways, streets and roads, and transit and environmental programs. The proposed project is included as project "F" in the M2 program and is subject to the provisions of OCTA's M2 Ordinance. Attachment B, Section II.A.4, of the M2 Ordinance contains the following language related to the design of freeway projects funded by M2:

"Freeway Projects will be built largely within existing rights of way using the latest highway design and safety requirements. However, to the greatest extent possible within the available budget, Freeway Projects shall be implemented using Context Sensitive Design, as described in the nationally recognized Federal Highway Administration (FHWA) Principles of Context Sensitive Design Standards. Freeway Projects will be planned, designed and constructed using a flexible community-responsive and collaborative approach to balance aesthetic, historic and environmental values with transportation safety, mobility, and maintenance and performance goals. Context Sensitive Design features include: parkway-style designs; environmentally friendly, locally native landscaping; sound reduction; improved wildlife passage and aesthetic treatments, designs and themes that are in harmony with the surrounding communities."

2.1.2.4 OCTA M2020 Plan/Measure M Next 10 Delivery Plan

OCTA adopted the M2020 Plan on September 10, 2012. The M2020 Plan is an early action delivery plan for the M2 program. The M2020 Plan identifies the development and construction of 14 freeway projects to be delivered before the year 2020. On November 14, 2016, the OCTA Board approved the transition from the M2020 Plan into the Measure M Next 10 Delivery Plan. Improvements to SR 55, including the proposed project (SR 55 between I-5 and SR 91), are included in the plan.

The Next 10 Delivery Plan establishes priorities and funding commitments over a 10-year period (2017-2026) to implement the transportation improvements described in the M2 program, despite changing economic and revenue conditions.

2.1.2.5 OCTA Long Range Transportation Plan

The OCTA LRTP provides a guiding document for transportation improvements for Orange County, which is considered in the development of the RTP. The general goals of the LRTP are to assess the performance of the transportation system over a 20-plus year horizon and to identify the projects that best address the needs of the system based on expected population, housing, and employment growth, while simultaneously considering forecasted financial assumptions. The LRTP reflects OCTA's current policies and commitments and incorporates input from local jurisdictions, business and community leaders, County residents, transportation planning professionals, and other stakeholders. OCTA updates the LRTP about every 4 years. The last LRTP was finalized on September 12, 2014. Improvements to SR 55 to add capacity and improve operations are included in the plan.

Local General Plans

General plans contain policies that guide land use-related decisions within a city or county. General plans address issues that directly and indirectly influence land uses (e.g., housing, noise, transportation, public services and facilities, and conservation and open space). Refer to Table 2.1-2 for an analysis of the consistency of the proposed project with local planning documents.

City of Tustin General Plan

Relevant circulation-related policies in the City of Tustin General Plan are described below.

Circulation Element (2017)

- Policy 3.2: Support capacity and noise mitigation improvements such as HOV lanes, general purpose lanes, auxiliary lanes and noise barriers on the I-5 and SR 55 freeways.
- Policy 3.3: Monitor and coordinate with Caltrans freeway work as it affects Tustin's roadway and require modifications as necessary.
- Policy 3.4: Maintain a proactive and assertive role with appropriate agencies dealing with regional transportation issues affecting the City.

Conservation/Open Space/Recreation Element (2008)

• Policy 14.4: Preserve public and private open space lands for active and passive recreational opportunities.

City of Santa Ana General Plan

Relevant circulation and land use-related policies in the City of Santa Ana General Plan are described below.

Circulation Element (2010)

• Policy 1.1: Coordinate transportation improvements in a manner which minimizes disruptions to the community.

- Policy 1.2: Coordinate with the State to provide a freeway system that promotes efficient and convenient access to City streets in a manner consistent with local land use policy.
- Policy 4.1: Program and prioritize transportation improvements to stimulate growth in major development areas.
- Policy 4.2: Assess land use and transportation project impacts through the development review process.
- Policy 8.2: Maintain compliance with regional, state, and federal programs which provide funding for transportation improvements.

City of Orange General Plan

Relevant circulation and land use-related policies in the City of Orange General Plan are described below.

Circulation Element (2010)

- Policy 2.3: Cooperate with and support local and regional agencies' efforts to improve regional arterials and transit in order to address increasing traffic congestion.
- Policy 2.5: Ensure that transportation facilities and improvements do not degrade the quality of Orange's commercial and residential areas.
- Policy 2.6: Encourage the use of regional rail, transit, bicycling, carpools, and vanpools for work trips to relieve traffic congestion.
- Policy 6.1: Supply adequate, clear, and correctly placed signage to direct both motorists and non-motorists toward destinations and away from hazards.

Natural Resources Element (2015)

• Policy 2.13: Control surface runoff water discharges into the stormwater conveyance system to comply with the City's National Pollutant Discharge Elimination System (NPDES) Municipal Permit and other regional permits issued by the Santa Ana Regional Water Quality Control Board.

City of Anaheim General Plan

Circulation Element

- Policy 1.2.1 Continue working with Caltrans, the FHWA and the FTA to address traffic flow along State highways that traverse the City.
- Policy 1.2.3 Work with Caltrans to identify needed improvements to its facilities in the City as necessary.
- Policy 1.2.4 Work with Caltrans and adjacent jurisdictions to improve the operational performance of highways within and adjacent to the City.
- Policy 1.2.5 Work with Caltrans in analyzing the performance of freeway interchanges located in the City and seek appropriate improvements.

- Policy 2.3.2 Actively engage in inter-jurisdictional planning efforts as part of the Measure M program.
- Policy 2.3.4 Participate in cooperative planning processes to promote effective regional transportation and sustainable development and ensure that citizens of Southern California can access jobs, housing and tourism destinations in Anaheim.
- Policy 4.1.1 Continue to work with Caltrans in its implementation of the State Scenic Highway Program. Ensure the preservation and enhancement of scenic routes through special highway design and building regulation.

Green Element

- Policy 4.1.1 Ensure compliance with the Federal Clean Water Act (CWA) requirements for NPDES permits, including developing and requiring the development of Water Quality Management Plans for all new development and significant redevelopment in the City.
- Policy 4.1.4 Require new development and significant redevelopment to utilize site preparation, grading and best management practices that provide erosion and sediment control to prevent construction-related contaminants from leaving the site and polluting waterways.
- Policy 4.1.5 Coordinate with appropriate Federal, State, and local resource agencies on development projects and construction activities affecting waterways and drainages.

County of Orange General Plan

Transportation Element (2012)¹

- Policy 2.1: Coordinate with the following transportation planning agencies: Caltrans, OCTA, the Transportation Corridor Agencies, and Orange County cities on various studies relating to freeway, tollway, and transportation corridor planning, construction, and improvement in order to facilitate the planning and implementation of an integrated circulation system.
- Policy 6.3: Work with adjacent jurisdictions to cooperatively implement needed measures that would provide HOV lanes, emergency lanes, additional travel lanes, necessary channelization, and/or bicycle lanes whenever warranted and feasible.

Land Use Element (2015)²

• Policy 14 Urban and Storm Runoff Regulations: To guide physical development within the County while protecting water quality through required compliance with urban and stormwater runoff regulations.

¹ County of Orange General Plan, <u>Transportation Element</u>.

² County of Orange General Plan, Land Use Element.

Specific Plans

Some municipalities adopt specific plans to implement the policies established in the general plan in a specific geographical area. No specific plans are located in the Study Area.

2.1.3 Environmental Consequences

Build Alternative (Preferred Alternative)

Existing and Planned Land Use

The proposed project would occur almost entirely within the existing right-of-way of SR 55 and would not directly require the permanent conversion from current and planned land uses to transportation uses; therefore, the proposed project is consistent with the current land use of the highway. Indirect or secondary impacts are not anticipated to occur. Furthermore, construction activities are not anticipated to interfere with land uses on the parcels or result in land use conflicts with adjacent businesses and residences near SR 55. Construction impacts would be temporary and would cease when the proposed project construction is complete. The project would result only in temporary impacts associated with acquisition of two TCEs located along southbound SR 55 near the Village Apartments and an adjacent undeveloped parcel to the north. Except for the TCEs, the project would be constructed within Caltrans right-of-way and will not result in permanent acquisition or permanent changes in land use as a result of the project. Detailed discussion of the TCEs is provided in Section 2.3.2 Relocations and Real Property Acquisition.

Consistency with State, Regional, and Local Plans and Programs

As analyzed below in Table 2.1-2, the proposed project is consistent with the policies and objectives outlined above within each General Plan for the cities of Tustin, Santa Ana, Orange, and Anaheim, and County of Orange. The proposed project would improve regional transportation facilities and maximize the efficiency of the circulation system. In addition, implementation of the proposed project would not result in changes to existing land use patterns along SR 55 because SR 55 is an existing transportation facility located in a highly developed area.

Furthermore, inclusion in the 2019 FTIP demonstrates that the proposed project was evaluated for regional impacts, meets the planning and regional requirements for demonstration of federal conformity, and is consistent with local air quality planning efforts. The design concept and scope of the proposed project is also consistent with the project description in the 2016-2040 financially constrained RTP/SCS.

No Build Alternative

Existing and Planned Land Use

The No Build Alternative would not result in the construction of any improvements to the project segment of SR 55 other than routine maintenance. As a result, the No Build Alternative would not result in adverse effects related to existing and planned land uses. No indirect or secondary impacts on land use and planning would result from implementation of the No Build Alternative.

Consistency with State, Regional, and Local Plans and Programs

Consistency with State, regional, and local plans and programs is related to the consistency of permanent changes with those plans. Therefore, impacts under the No Build Alternative would not result in any inconsistencies with State, regional, and local plans and policies.

Policy	Build Alternative (Preferred Alternative)	No Build Alternative			
City of Tustin General Plan					
Circulation Element (2017)					
Policy 3.2: Support capacity and noise mitigation improvements such as high- occupancy vehicle (HOV) lanes, general purpose lanes, auxiliary lanes and noise barriers on the I-5 and SR 55 freeways.	Consistent. The Build Alternative adds general purpose and auxiliary lanes in each direction at strategic locations along SR 55 between just north of the I-5/SR 55 interchange and just south of the SR 55/SR 91 interchange. The Build Alternative would also include one additional noise barrier.	Inconsistent. The No Build Alternative would not improve conditions on SR 55 and would therefore not introduce general purpose lanes or noise barriers on SR 55.			
Policy 3.3: Monitor and coordinate with California Department of Transportation (Caltrans) freeway work as it affects Tustin's roadway and require modifications as necessary.	Consistent. All improvements to SR 55 are, and would continue to be, coordinated with the City of Tustin and Caltrans.	N/A			
Policy 3.4: Maintain a proactive and assertive role with appropriate agencies dealing with regional transportation issues affecting the City.	Consistent. The improvements to SR 55 associated with the proposed project would affect the City of Tustin, and the City of Tustin has an active role in project development meetings with OCTA.	N/A			
Conservation/Open Space/Recreation E	lement (2017)				
Policy 14.4: Preserve public and private open space lands for active and passive recreational opportunities.	Consistent. The proposed project would not result in the removal of open space lands in Tustin.	Consistent. The No Build Alternative would not result in the removal of open space lands in Tustin.			
City of Santa Ana General Plan					
Circulation Element (2010)		r			
Policy 1.1: Coordinate transportation improvements in a manner which minimizes disruptions to the community.	Consistent . Except for the two TCEs, construction of the proposed project would occur within existing right-of-way and would not require road closures or detours, therefore minimizing disruption to the community.	N/A			
Policy 1.2: Coordinate with the State to provide a freeway system that promotes efficient and convenient access to City streets in a manner consistent with local land use policy.	Consistent. Implementation of the proposed project includes coordination with Caltrans and will improve efficiency and access to SR 55 from local arterials, including those in the City of Santa Ana.	Inconsistent. The No Build Alternative would not improve conditions on SR 55 and would therefore not be in coordination with the State to provide a system with efficient and convenient access to city streets.			

Table 2.1-2: Consistency with State, Regional, and Local Plans and Programs

Policy	Build Alternative (Preferred Alternative)	No Build Alternative
Policy 4.1: Program and prioritize transportation improvements to stimulate growth in major development areas.	Consistent. Improvements to SR 55 are included in the 2016 RTP, which is designed to address and accommodate existing and projected growth in the region.	Inconsistent. The No Build Alternative would not result in transportation improvements to SR 55, which is included in the 2016 RTP/SCS.
Policy 4.2: Assess land use and transportation project impacts through the development review process.	Consistent. The proposed project is subject to CEQA and NEPA environmental review. Land use and transportation impacts are discussed as part of the CEQA/NEPA documentation.	N/A
Policy 8.2: Maintain compliance with regional, state, and federal programs which provide funding for transportation improvements.	Consistent. Improvements to SR 55 are included in the 2016 RTP/SCS and the 2019 FTIP. Therefore, the proposed project is in compliance with regional, State, and federal programs.	Inconsistent. The No Build Alternative would not improve conditions on SR 55, and would not be in compliance with the RTP/SCS and FTIP.
City of Orange General Plan		
Circulation Element (2015)		
Policy 2.3: Cooperate with and support local and regional agencies' efforts to improve regional arterials and transit in order to address increasing traffic congestion.	Consistent. The proposed project adds general purpose and auxiliary lanes in each direction at strategic locations along SR 55 between just north of the I-5/SR 55 interchange and just south of the SR 55/SR 91 interchange. The corridor Cities are members of the project development team and are part of the interdisciplinary team working to implement the proposed project. OCTA/Caltrans have been working with the Cities to avoid/minimize impacts to regional and local facilities.	N/A.
Policy 2.5: Ensure that transportation facilities and improvements do not degrade the quality of Orange's commercial and residential areas.	Consistent. Except for the two TCEs, construction of the proposed project would occur within existing right-of-way and would therefore avoid the degradation of adjacent commercial and residential areas.	N/A
Policy 2.6: Encourage the use of regional rail, transit, bicycling, carpools, and vanpools for work trips to relieve traffic congestion.	Consistent. Within the limits of the proposed project, SR 55 currently has three to five general purpose lanes and an HOV lane in each direction, with auxiliary lanes between ramps at various locations. The purpose of the proposed project is to provide congestion relief, improve traffic flow, and increase mobility on SR 55.	Consistent. The No Build Alternative would maintain the existing HOV lane in each direction.
Policy 6.1: Supply adequate, clear, and correctly placed signage to direct both motorists and non-motorists toward destinations and away from hazards.	Consistent. The proposed project would place proper signage along SR 55 to direct motorists toward destinations.	Consistent. The No Build Alternative would maintain existing signage along SR 55.

	Build Alternative					
Policy	(Preferred Alternative)	No Build Alternative				
Natural Resources Element (2015)						
Policy 2.13: Control surface runoff water discharges into the stormwater conveyance system to comply with the City's National Pollutant Discharge Elimination System (NPDES) Municipal Permit and other regional permits issued by the Santa Ana Regional Water Quality Control Board.	Consistent. The proposed project is an NCCP/HCP covered freeway improvement project and, therefore, will comply with the provisions of the Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ, NPDES No. CAS00003) and the NPDES General Permit, WDRs for Discharges of Stormwater Runoff Associated with Construction Activities (Order No. 2009-0009-DWQ, NPDES No. CAS00002), and any subsequent permit in effect at the time of construction.	N/A				
City of Anaheim General Plan						
Circulation Element (2018)						
Policy 1.2.1 Continue working with Caltrans, the Federal Highway Administration and the Federal Transit Administration to address traffic flow along State highways that traverse the City.	Consistent. Implementation of the proposed project includes coordination with Caltrans and will improve traffic flow in the city of Anaheim.	Inconsistent . The No Build Alternative would not improve conditions on SR 55 and would therefore not address traffic flow within the city.				
Policy 1.2.3 Work with Caltrans to identify needed improvements to its facilities in the City as necessary.	Consistent. Implementation of the proposed project includes coordination with Caltrans and will improve traffic flow in the city of Anaheim.	Inconsistent. The No Build Alternative would not improve conditions on SR 55 and would therefore not address traffic flow within the city.				
Policy 1.2.4 Work with Caltrans and adjacent jurisdictions to improve the operational performance of highways within and adjacent to the city.	Consistent. Implementation of the proposed project includes coordination with Caltrans and will improve traffic flow in the city of Anaheim.	Inconsistent. The No Build Alternative would not improve conditions on SR 55 and would therefore not address traffic flow within the city.				
Policy 1.2.5 Work with Caltrans in analyzing the performance of freeway interchanges located in the city and seek appropriate improvements.	Consistent. Implementation of the proposed project includes coordination with Caltrans and will improve traffic flow in the city of Anaheim.	Inconsistent. The No Build Alternative would not improve conditions on SR 55 and would therefore not address traffic flow within the city.				
Policy 2.3.2 Actively engage in inter- jurisdictional planning efforts as part of the Measure M program.	Consistent. The proposed project included inter-jurisdictional planning efforts with Caltrans to comply with the Measure M program.	N/A				
Policy 2.3.4 Participate in cooperative planning processes to promote effective regional transportation and sustainable development and ensure that citizens of Southern California can access jobs, housing, and tourism destinations in Anaheim.	Consistent. Implementation of the proposed project includes coordination with Caltrans and will improve traffic flow in the city of Anaheim.	Inconsistent. The No Build Alternative would not improve conditions on SR 55 and would therefore not address traffic flow within the city.				

Policy	Build Alternative (Preferred Alternative)	No Build Alternative
Policy 4.1. Continue to work with Caltrans in its implementation of the State Scenic Highway Program. Ensure the preservation and enhancement of scenic routes through special highway design and building regulation.	Consistent. A portion of the proposed project limits occur within a state scenic highway. Therefore, coordination with Caltrans would occur to ensure the preservation and enhancement of the highway.	N/A
Green Element (2018)		
Policy 4.1.1 Ensure compliance with the Federal Clean Water Act requirements for National Pollutant Discharge Elimination System (NPDES) permits, including developing and requiring the development of Water Quality Management Plans for all new development and significant redevelopment in the City.	Consistent. The proposed project is an NCCP/HCP covered freeway improvement project and, therefore, will comply with the provisions of the Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ, NPDES No. CAS00003) and the NPDES General Permit, WDRs for Discharges of Stormwater Runoff Associated with Construction Activities (Order No. 2009-0009-DWQ, NPDES No. CAS00002), and any subsequent permit in effect at the time of construction.	N/A
Policy 4.1.4 Require new development and significant redevelopment to utilize site preparation, grading and best management practices that provide erosion and sediment control to prevent construction-related contaminants from leaving the site and polluting waterways.	Consistent. Erosion control measures will be implemented during construction and as part of the proposed project's improvements. The proposed BMPs to minimize erosion include, but are not limited to, temporary fiber rolls, temporary mulch, drainage inlet protection, concrete washout facilities, street sweeping, and hydroseeding.	N/A
Policy 4.1.5 Coordinate with appropriate Federal, State, and local resource agencies on development projects and construction activities affecting waterways and drainages.	Consistent. Implementation of the proposed project includes coordination with Caltrans and permitting agencies for activities affecting waterways and drainages.	N/A
County of Orange General Plan		
Transportation Element (2012)		
Policy 2.1: Coordinate with the following transportation planning agencies: Caltrans, OCTA, the Transportation Corridor Agencies, and County of Orange cities on various studies relating to freeway, tollway, and transportation corridor planning, construction, and improvement in order to facilitate the planning and implementation of an integrated circulation system.	Consistent. Implementation of the proposed project includes coordination with Caltrans, OCTA, and the County of Orange cities and communities within the study area. All improvements to SR 55 are, and would continue to be, coordinated with the County of Orange and Caltrans.	N/A
Policy 6.3: Work with adjacent jurisdictions to cooperatively implement needed measures that would provide high occupancy vehicle lanes, emergency lanes or additional travel lanes, necessary channelization, and/or bicycle lanes whenever warranted and feasible.	Consistent. All improvements to SR 55 are, and would continue to be, coordinated with the County of Orange and Caltrans.	N/A

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Policy	Build Alternative (Preferred Alternative)	No Build Alternative
Land Use Element (2015)		
Policy 14 Urban and Storm Runoff Regulations: To guide physical development within the County while protecting water quality through required compliance with urban and stormwater runoff regulations.	Consistent. The proposed project is an NCCP/HCP covered freeway improvement project and, therefore, will comply with the provisions of the Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ, NPDES No. CAS00003) and the NPDES General Permit, WDRs for Discharges of Stormwater Runoff Associated with Construction Activities (Order No. 2009-0009-DWQ, NPDES No. CAS00002), and any subsequent permit in effect at the time of construction.	N/A

Notes: BMP: Best Management Practice; Caltrans: California Department of Transportation; CEQA: California Environmental Quality Act; FTIP: Federal Transportation Improvement Program; HOV: high-occupancy vehicle; I-5: Interstate 5; N/A: not applicable; NCCP/HCP: Natural Community Conservation Plan/Habitat Conservation Plan; NEPA: National Environmental Policy Act; NPDES: National Pollution Discharge Elimination System: OCTA: Orange County Transportation Authority; RTP: Regional Transportation Plan; SR 55: State Route 55; WDR: Waste Discharge Requirement

2.1.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures are proposed since the proposed project would avoid conversion of or disruption to adjacent land uses within the Study Area by working within existing right-of-way and maintaining consistency with all local policies within the various General Plans.

2.2 Growth

2.2.1 Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with the NEPA of 1969, requires evaluation of the potential environmental effects of all proposed federal activities and programs. This provision includes a requirement to examine indirect effects, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations (40 CFR 1508.8) refer to these consequences as indirect impacts. Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

CEQA also requires the analysis of a project's potential to induce growth. The CEQA Guidelines (Section 15126.2[d]) require that environmental documents "...discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment..."

2.2.2 Affected Environment

Existing and General Plan land uses in the cities of Tustin, Santa Ana, Orange, and Anaheim along the project segment of SR 55, as well as projected growth rates for the various jurisdictions are discussed in Section 2.1, Land Use, and in Chapter 1, Section 1.2.2.3, Social and Economic Demands.

This growth impact analysis follows the First Cut screening guidelines provided in the Caltrans' *Guidance for Preparers of Growth-Related, Indirect Impact Analyses* (May 2006) which provides a first-cut screening approach to growth impact analysis that identifies the need for and the extent of growth-related impact analysis based on the responses to various questions related to a project's change in accessibility, its potential to influence growth, and the potential for project-related growth to impact resources of concern.

2.2.3 Environmental Consequences

2.2.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

Any potential growth-related impacts of the Build Alternative would be permanent. There would be no temporary growth-inducing impacts.

No Build Alternative

No improvements to SR 55 within the project limits would be implemented under the No Build Alternative. Therefore, the No Build Alternative would not result in temporary growth-inducing impacts.

2.2.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

The assessment of the potential growth-related impacts of the Build Alternative was conducted using the first-cut screening analysis approach, including assessment of whether further analysis would be necessary based on consideration of the following four questions.

How, if at all, does the proposed project potentially change accessibility?

The Build Alternative proposes improvements to an existing freeway facility and does not alter the access to or from the facility. The proposed project is located in a highly urbanized area, and the proposed improvements do not provide a new transportation facility or new access points to previously inaccessible areas. The Build Alternative would help to alleviate existing and forecasted traffic congestion in the Study Area, resulting in improved operations on I-5 and on nearby arterials. Additionally, the Build Alternative would help to accommodate projected future (2055) traffic volumes in the Study Area consistent with adopted local land use and transportation plans (as discussed in Section 2.1, Land Use, and in Chapter 1, Section 1.2.2.3, Social Demands and Economic Development). Therefore, the project does not have the potential to change accessibility.

How, if at all, do the project type, project location, and growth pressure potentially influence growth?

Growth in the cities of Tustin, Santa Ana, Orange, and Anaheim is expected to occur with or without the Build Alternative; and the Build Alternative would accommodate approved and planned growth in the Study Area (see Table 2.22-1 for a list of reasonably foreseeable projects within the Study Area) because they would add capacity to a heavily traveled segment of SR 55 and thereby help to alleviate existing and forecasted congestion in the Study Area. Pressure for growth is a result of a combination of factors, including economic, market, and land use demands and conditions. The corridor cities are projected to experience population growth rates ranging from 16.8 percent (City of Anaheim) to 4.2 percent (Santa Ana) between 2012 and 2040 as projected by SCAG's 2016–2040 RTP/SCS Final Growth Forecasts (SCAG 2016c).

The improvements made to alleviate congestion and enhance the capacity of the existing SR 55 are unlikely to encourage growth. Although travel times would slightly decrease and speeds would slightly increase, the project is unlikely to lead to the intensification of development densities or schedules for development, and no development is predicated on the project being built. No known development with the project area is contingent on the proposed improvements, and development within corridor cities is not dependent on the completion of this freeway improvement project. Additionally, the SR 55 corridor runs through a heavily urbanized and built-out area, wherein a substantial amount of land is not available for new development. The project is in conformance with the growth-related objectives and policies of the General Plans of the Cities of Tustin, Santa Ana, Orange, Anaheim and the County of Orange. The overarching goals identified in these General Plans call for the provision of adequate transportation facilities, a reduction in traffic congestion, and interagency coordination to achieve a reduction in regional traffic congestion. The Build Alternative does not propose a land use that is inconsistent with these goals or other related policies. Moreover, the fact that the project is called for in the 2019

FTIP, for which each local jurisdiction provides input, suggests that growth policies would effectively manage any growth created by the Build Alternative.

The Build Alternative is unlikely to alter the historic and projected growth patterns within the corridor cites and the County of Orange and does not encourage growth on undeveloped and unplanned land. The proposed transportation improvements of this project accommodate existing traffic in the area. Therefore, the Build Alternative would accommodate existing and planned growth but would not directly or indirectly influence growth beyond what is currently planned.

Is project-related growth reasonably foreseeable as defined in NEPA?

Under NEPA, indirect impacts need be evaluated only if they are reasonably foreseeable, rather than remote and speculative. As discussed above, the Build Alternative would not influence growth beyond those projects currently planned for the area and would not influence the rate, type, or amount of growth that would otherwise occur. Therefore, no reasonably foreseeable project-related growth would occur under the Build Alternative.

If there is project-related growth, how, if at all, will that impact resources of concern?

As indicated above, because the Build Alternative would not directly influence the rate, type, or amount of growth that would otherwise occur, the reasonably foreseeable growth anticipated to occur in the Study Area is not project-related.

Because the Build Alternative would not result in growth-inducing impacts, no analysis of those potential impacts beyond what is contained above in the first-cut screening analysis is necessary.

No Build Alternative

No improvements to SR 55 would occur under the No Build Alternative. Therefore, the No Build Alternative would not result in any permanent growth-related impacts.

2.2.4 Avoidance, Minimization, and/or Mitigation Measures

As the Build Alternative would not result in any temporary or permanent growth-related impacts, no avoidance, minimization, or mitigation measures are required.

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2.3 Community Impacts

2.3.1 Community Character and Cohesion

2.3.1.1 Regulatory Setting

NEPA established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 USC 4331[b][2]). The FHWA in its implementation of NEPA (23 USC 109[h]) directs that final decisions on projects are to be made in the best overall public interest. This requires considering adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Under CEQA, an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Because this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

2.3.1.2 Affected Environment

This section is based on information from the census tract information available from the U.S. Census Bureau: the 2010 Census and the 2013-2017 American Community Survey (ACS) 5-year Estimates. The study area for community character and cohesion includes census tracts located adjacent to the project alignment traversing through the cities of Anaheim, Orange, Santa Ana, and Tustin, and unincorporated areas in the County of Orange. Specifically, 17 census tracts are adjacent to the project alignment (Census Tracts 762.02, 219.15, 758.13, 758.11, 758.12, 758.05, 758.15, 758.16, 758.06, 758.07, 758.08, 757.01, 754.03, 755.04, 755.05, 744.08, and 755.14), shown on Figure 2.3–1.





Community character consists of the social and economic characteristics, attributes, and assets that contribute to the authenticity and uniqueness of an area that fosters a sense of place for its residents. The southern portion of the study area between McFadden Avenue and Fairhaven Avenue consists of commercial uses, activity centers (parks, schools, a senior center, medical and health facilities, religious institutions), single-family and multi-family residential properties (including mobile home parks), a small number of business parks and numerous planned developments of various uses. By contrast, the northern and central portions of the study area that extend from Fairhaven Avenue to SR-91 mainly consist of single-family residential properties, a smaller number of multifamily residences (including mobile home parks), commercial properties, and activity centers (schools, park and recreational facilities, medical and health facilities, religious institutions). Commercial uses adjacent to SR-55 have been developed to take advantage of proximity to the freeway.

Community cohesion is the degree to which residents have a sense of belonging to their neighborhoods, a commitment to the community, and/or a strong attachment to neighbors, groups, and institutions, usually because of continued association over time. Demographic data compiled by the U.S. Census Bureau, including the 2010 Census and the 2013-2017 ACS may be used to measure community-level cohesion. The following demographic indicators that tend to correlate with a higher degree of community cohesion were used to determine the degree of community-level cohesion for the 17 census tracts in the study area:

- **Ethnicity:** In general, homogeneity of the population contributes to higher levels of community cohesion. Communities that are ethnically homogenous often speak the same language, hold similar beliefs, and share a common culture and therefore are more likely to engage in social interaction on a routine basis.
- **Household Size:** In general, communities with a higher percentage of families with children are more cohesive than communities comprised of largely single people. This appears to be because children tend to establish friendships with other children in their community. The social networks of children often lead to the establishment of friendships and affiliations among parents in the community. Although the Census Bureau does not provide specific data regarding the number of children present in each household, the Census Bureau provides data regarding the persons per household, which can serve as a proxy for households with children.
- Age: In general, communities with a high percentage of elderly residents (65 years or older) tend to demonstrate a greater social commitment to their community. This is because the elderly population, which includes retirees, often tends to be more active in the community because they have more time available for volunteering and participating in social organizations.
- Housing Occupancy: Communities with a higher percentage of owner-occupied residences are typically more cohesive because their population tends to be less mobile. Because they have a financial stake in their community, homeowners often take a greater interest in what is happening in their community than renters do. This means they often have a stronger sense of belonging to their community.
- **Housing Tenure:** Communities with a high percentage of long-term residents are typically more cohesive because a greater proportion of the population has had time to establish social networks and develop an identity with the community.

• **Transit-Dependent Population:** Communities with a high percentage of residents who are dependent on public transportation typically tend to be more cohesive than communities that are dependent on automobiles for transportation. This is because residents who tend to walk or use public transportation for travel tend to engage in social interactions with each other more frequently than residents who travel by automobile.

These indicators of community character and cohesion in the study area and the applicable local jurisdictions are described in greater detail below.

Ethnicity

Table 2.3-1 provides the racial and ethnic composition of the County, the cities of Anaheim, Orange, Santa Ana, and Tustin, and the 17 census tracts in the study area as reported in the 2010 Census. As shown in this section, the racial composition of the study area census tracts varies. With the exception of Census Tracts 754.03, 744.08, and 755.14, those identifying as white account for 60 to 80 percent of the study area census tracts, which is greater than the population of the cities of Anaheim, Santa Ana, and Tustin, but is generally consistent with the City and County of Orange overall. Census Tracts 758.16, 754.03, 744.08, and 755.14 have lower percentages of populations identified as White, which are consistent with the cities of Anaheim, Santa Ana, and Tustin. The Caltrans Environmental Handbook Volume 4 (Community Impact Assessment) states that minority individuals are defined as members of the following population groups: American Indian or Alaskan Native, Asian or Pacific Islander, Black, or Hispanic. Three of the census tracts include substantial minority populations of Hispanics and Latinos (exceeding 50 percent of the census tract population). Between 3 and 45 percent of the population in the study area census tracts identify as some other race. Although all 17 study area census tracts contain substantial Hispanic or Latino populations, racial or ethnic homogeneity does not appear to be evident in any of the census tracts in the study area.

Area	White	Black	American Indian/ Alaska Native	Asian	Hawaiian/ Pacific Islanders	Other	Hispanic/ Latino
County							
Orange	1,830,758	50,744	18,132	537,804	9,354	435,641	1,012,973
County	(60.8%)	(1.7%)	(0.6%)	(17.9%)	(0.3%)	(14.5%)	(33.7%)
Cities							
City of	177,237	9,347	2,648	49,857	1,607	80,705	177,467
Anaheim	(52.7%)	(2.8%)	(0.8%)	(14.8%)	(0.5%)	(24.0%)	(52.8%)
City of	91,522	2,227	993	15,350	352	20,567	52,014
Orange	(67.1%)	(1.6%)	(0.7%)	(11.3%)	(0.3%)	(15.1%)	(38.1%)
City of	148,838	4,856	3,260	34,138	976	120,789	253,928
Santa Ana	(45.9%)	(1.5%)	(1.0%)	(10.5%)	(0.3%)	(37.2%)	(78.2%)
City of	39,729	1,722	442	15,299	268	14,499	30,024
Tustin	(52.6%)	(2.3%)	(0.6%)	(20.3%)	(0.4%)	(19.2%)	(39.7%)

Area	White	Black	American Indian/ Alaska Native	Asian	Hawaiian/ Pacific Islanders	Other	Hispanic/ Latino
Census Trac	:ts					·	
762.02	3,953	127	77	439	36	898	2,246
	(68.0%)	(2.2%)	(1.3%)	(7.6%)	(0.6%)	(15.5%)	(38.6%)
219.15	2,820 (70.8%)	46 (1.2%)	8 (0.2%)	804 (20.2%)	0	136 (3.4%)	567 (14.2%)
758.13	3,396	30	38	757	8	615	1,268
	(67%)	(0.6%)	(0.7%)	(14.9%)	(0.2%)	(12.1%)	(25%)
758.11	2,025	38	12	194	7	940	1,919
	(60.8%)	(1.1%)	(0.4%)	(5.8%)	(0.2%)	(28.2%)	(57.6%)
758.12	4,761	75	43	28	14	1,016	3,474
	(72.4%)	(1.1%)	(0.7%)	(0.4%)	(0.2%)	(15.5%)	(52.9%)
758.15	3,609	54	29	313	20	1,001	2,147
	(69.7%)	(1.0%)	(0.6%)	(6%)	(0.4%)	(19.3%)	(41.5%)
758.05	2,926	48	45	201	7	848	2,061
	(69.5%)	(1.1%)	(1.1%)	(4.8%)	(0.2%)	(20.1%)	(48.9%)
758.16	2,195	100	19	539	11	670	1,643
	(59.2%)	(2.7%)	(0.5%)	(14.5%)	(0.3%)	(18.1%)	(44.3%)
758.06	3,794	96	47	428	17	1,522	2,945
	(62%)	(1.6%)	(0.8%)	(7.0%)	(0.3%)	(24.9%)	(48.1%)
758.07	2,894	67	57	428	11	718	1,754
	(66.9%)	(1.5%)	(1.3%)	(9.9%)	(0.3%)	(16.6%)	(40.6%)
758.08	2,738	32	15	167	10	299	802
	(80.4%)	(0.9%)	(0.4%)	(4.9%)	(0.3%)	(8.8%)	(23.6%)
757.01	4,438	181	57	492	62	1,389	3,031
	(64.5%)	(2.6%)	(0.8%)	(7.2%)	(0.9%)	(20.2%)	(44.1%)
755.04	3,058	64	30	304	15	425	1,155
	(75.7%)	(1.6%)	(0.7%)	(7.5%)	(0.4%)	(10.5%)	(28.6%)
754.03	3,988	213	54	457	16	2,056	4,583
	(56.3%)	(3.0%)	(0.8%)	(6.5%)	(0.2%)	(29.0%)	(64.7%)
755.05	2,255	71	36	416	22	651	1,478
	(62.7%)	(2.0%)	(1.0%)	(11.6%)	(0.6%)	(18.1%)	(41.1%)
744.08	2,211	176	50	322	43	2,400	4,212
	(41.0%)	(3.3%)	(0.9%)	(6.0%)	(0.8%)	(44.5%)	(78.0%)
755.14	1,553 (41.9%)	88 (2.4%)	34 (0.9%)	513 (13.9%)	4 (0.1%)	1,379 (37.2%)	2,455 (66.3%)

Source: 2010 Census

Notes: Percentages do not add up to 100 percent. The United States Census Bureau included five race categories in the 2010 Census: White, Black or African-American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander. Respondents who were unable to identify with any of these five categories were able to identify as Some Other Race on the 2010 Census questionnaire. In addition, respondents are able to identify as more than one race or write-in detailed information about their race. According to the United States Census Bureau, persons who identify their origin as Hispanic or Latino may be of any race.

Household Size

Table 2.3-2 provides household characteristics for the study area census tracts, the cities of Anaheim, Orange, Santa Ana, and Tustin, and the County, as reported in the 2013-2017 ACS 5-Year Estimates. As shown below, the median household income in the study area census tracts varies widely. Census Tracts 744.08 and 755.14 are characterized by less affluent residents, with a lower median household income than the four cities and the County. Census Tracts 762.02,

758.11, 758.12, 758.15, 758.05, 758.06, 758.07, 758.08, 757.01, and 755.05 are all generally consistent with the County's median household income level and near the median household income levels for the cities of Anaheim, Orange, and Tustin. Census Tracts 219.15, 758.06, 755.04, 754.03, and 755.05 have smaller average household sizes than the County and the four cities. Census Tracts 762.02, 758.13, 758.15, 758.05, 758.16, 757.01, and 755.14 have larger average household sizes than the County and the cities of Orange and Tustin but smaller than the cities of Anaheim and Santa Ana. Census Tract 758.11 reported the largest average household size at 4.23 persons, and Census Tract 755.05 reported the smallest average household size at 2.57 persons.

Area	Median Household Income	Persons per Household
County		
Orange County	\$81,851	2.99
Study Area Cities		
Anaheim	\$65,313	3.38
Orange	\$83,500	3
Santa Ana	\$57,151	4.37
Tustin	\$73,567	2.98
Study Area Census Tracts		
Census Tract 762.02	\$82,805	3.03
Census Tract 219.15	\$118,438	2.72
Census Tract 758.13	\$117,813	3.01
Census Tract 758.11	\$73,357	4.23
Census Tract 758.12	\$70,250	3.52
Census Tract 758.15	\$78,351	3.24
Census Tract 758.05	\$75,159	3.17
Census Tract 758.16	\$64,048	3.11
Census Tract 758.06	\$77,546	2.94
Census Tract 758.07	\$90,868	3.51
Census Tract 758.08	\$77,546	2.98
Census Tract 757.01	\$82,591	3.23
Census Tract 755.04	\$66,797	2.62
Census Tract 754.03	\$66,532	2.93
Census Tract 755.05	\$70,938	2.57
Census Tract 744.08	\$45,245	3.54
Census Tract 755.14	\$42,708	3.33

Table 2.3-2: Household Income and Size

Source: 2013-2017 ACS 5-Year Estimates (2017)

Age of Population

Table 2.3-3 shows the age distribution, including the median age, of the population in the County, the cities of Anaheim, Orange, Santa Ana, and Tustin, and the study area census tracts, as reported in the 2010 Census. A higher median age is often characteristic of a more mature and affluent community, while a lower median age is often characteristic of a less mature, less affluent community. The majority of the study area census tracts reported median ages lower

than the County and the study area cities of Anaheim, Santa Ana, and Tustin, with the exception of Census Tracts 219.15, 758.13, 758.07, 758.08, 755.04, and 755.05, which have higher median ages than that of the County.

Area	Median Age	Population is < 15 Years Old	Population is 15-64 Years Old	Population is > 64 Years Old		
County						
Orange County	36.2	20%	68.60%	11.60%		
Study Area Cities						
Anaheim	32.4	22.60%	68.10%	9.30%		
Orange	34.8	19.10%	70.30%	10.60%		
Santa Ana	29.1	25.60%	67.60%	6.80%		
Tustin	33.4	22.40%	69.20%	8.40%		
Study Area Census Tr	acts					
Census Tract 762.02	35.8	20.70%	68.90%	10.40%		
Census Tract 219.15	49	13.70%	64.90%	21.40%		
Census Tract 758.13	43	17%	68.40%	14.60%		
Census Tract 758.11	29.5	24.80%	66.70%	8.50%		
Census Tract 758.12	31.3	25.10%	65.40%	9.50%		
Census Tract 758.15	33.9	20.80%	68.30%	10.90%		
Census Tract 758.05	32.4	20.80%	49.50%	28.70%		
Census Tract 758.16	32.2	23.50%	68.70%	7.80%		
Census Tract 758.06	35.1	21.30%	66.40%	12.30%		
Census Tract 758.07	36.7	19.80%	66.70%	13.50%		
Census Tract 758.08	43.9	16.90%	65%	18.10%		
Census Tract 757.01	34.9	21%	67%	12%		
Census Tract 755.04	39.9	18.60%	64.90%	16.50%		
Census Tract 754.03	33.7	19.70%	70.70%	9.60%		
Census Tract 755.05	37.3	18.60%	68.70%	12.70%		
Census Tract 744.08	28.3	28.40%	67.10%	4.50%		
Census Tract 755.14	29.5	24%	69.70%	6.30%		

Table 2.3-3: Age Distribution

Source: 2010 Census

Housing Occupancy

Table 2.3-4 provides the number of housing units in the study area census tracts, the cities of Anaheim, Orange, Santa Ana, and Tustin, and the County in 2010, as reported in the 2010 Census. As shown in Table 2.3-4, the percentage of owner-occupied residences in Census Tracts 219.15 (89.7 percent), 758.13 (88.6 percent), 758.11 (63.6 percent), 758.15 (66.8 percent), 758.07 (72.2 percent), 758.08 (91%), and 755.04 (63.7 percent) are higher than Orange County overall (61 percent). Anaheim, Orange, Santa Ana, and Tustin each have a lower percentage of owner-occupied residences compared to Orange County overall.

Table 2.3-4: Housing Profile

Area	Total Housing Units	Housing Units Occupied	Owner-Occupied Housing Units	Renter-Occupied Housing Units
County				
Orange County	1,042,254	984,503 (95%)	599,032 (61%)	385,471 (39%)
Study Area Cities	•			
Anaheim	104,237	98,294 (94.3%)	47,677 (48.5%)	50,617 (51.5%)
Orange	45,111	43,367 (96.1%)	36,319 (60.7%)	17,048 (39.3%)
Santa Ana	77,796	74,381 (96%)	36,613 (49%)	37,768 (51%)
Tustin	26,335	24,839 (94%)	13,109 (53%)	11,730 (47%)
Study Area Census Trac	cts	_		-
Census Tract 762.02	2,005	1,919 (95.7%)	1,151 (60%)	768 (40%)
Census Tract 219.15	1,494	1,458 (97.6%)	1,308 (89.7%)	150 (10.3%)
Census Tract 758.13	1,746	1,677 (96%)	1,486 (88.6%)	19 (11.4%)
Census Tract 758.11	810	788 (97.3%)	501 (63.6%)	287 (36.4%)
Census Tract 758.12	1,911	1,855 (97.1%)	974 (52.5%)	881 (47.5%)
Census Tract 758.15	1,635	1,598 (97.7%)	1,068 (66.8%)	530 (33.2%)
Census Tract 758.05	1,374	1,328 (96.7%)	640 (48.2%)	688 (51.8%)
Census Tract 758.16	1,232	1,180 (95.8%)	592 (50.2%)	588 (49.8%)
Census Tract 758.06	2,146	2,065 (96.2%)	947 (45.9%)	1,118 (54.1%)
Census Tract 758.07	1,253	1,218 (97.2%)	879 (72.2%)	339 (27.8%)
Census Tract 758.08	1,153	1,132 (98.2%)	1.030 (91%)	102 (9%)
Census Tract 757.01	2,181	2,094 (96%)	1,187 (56.7%)	907 (43.3%)
Census Tract 755.04	1,590	1,533 (96.4%)	976 (63.7%)	557 (36.3%)
Census Tract 754.03	2,500	2,373 (94.9%)	1,369 (57.7%)	1,004 (42.3%)
Census Tract 755.05	1,474	1,387 (94.1%)	584 (42.1%)	803 (57.9%)
Census Tract 744.08	1,640	1,527 (93.1%)	375 (24.6%)	1,152 (75.4%)
Census Tract 755.14	1,184	1,109 (93.7%)	179 (16.1%)	930 (83.9%)

Source: 2010 Census

2.3-8

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Housing Tenure

Housing tenure is shown in Table 2.3-5. As shown in the table, 28.4 percent of the County's residents have lived in their current residences for more than 10 years and therefore can be considered long-term residents. Similar to the County, a large percentage (29.6 and 27.9 percent, respectively) of the population in the cities of Orange and Santa Ana consist of long-term residents. By comparison, the cities of Anaheim and Tustin have relatively lower percentages of long-term residents (25.5 percent and 19.6 percent, respectively).

Area	Householder Moved into Unit 2010 or Later into Unit		Householder Moved into Unit Moved in 1999 or Earlier (Long-Term Residents)	
County			·······	
Orange County	451,876	281,732	291,368	
	(44.1%)	(27.5%)	(28.4%)	
Study Area Cities				
Anaheim	47,242	27,487	25,551	
	(47.1%)	(27.4%)	(25.5%)	
Orange	17,623	12,363	12,639	
	(41.3%)	(29%)	(29.6%)	
Santa Ana	32,024	22,779	21,177	
	(42.2%)	(30%)	(27.9%)	
Tustin	13,745	7,291	5,149	
	(52.5%)	(27.8%)	(19.6%)	
Study Area Census Tra	acts			
Census Tract 762.02	866	393	645	
	(46.1%)	(20.4%)	(33.5%)	
Census Tract 219.15	445	375	563	
	(32.2%)	(27.1%)	(40.7%)	
Census Tract 758.13	455	577	650	
	(27%)	(34.3%)	(38.7%)	
Census Tract 758.11	262	271	281	
	(32.2%)	(33.3%)	(34.5%)	
Census Tract 758.12	880	471	504	
	(47.4%)	(25.4%)	(27.2%)	
Census Tract 758.15	476	522	584	
	(30.1%)	(33%)	(36.9%)	
Census Tract 758.05	534	309	398	
	(43.1%)	(24.9%)	(32.1%)	
Census Tract 758.16	522	492	208	
	(42.7%)	(40.3%)	(17.1%)	
Census Tract 758.06	980	530	543	
	(47.8%)	(25.8%)	(26.4%)	
Census Tract 758.07	408	303	468	
	(34.6%)	(25.7%)	(39.7%)	
Census Tract 758.08	233	329	537	
	(21.2%)	(29.9%)	(48.8%)	
Census Tract 757.01	934	453	749	
	(43.7%)	(21.2%)	(35.1%)	

Table 2.3-5: Housing Tenure

Area	Householder Moved into Unit 2010 or Later	Householder Moved into Unit	Householder Moved into Unit Moved in 1999 or Earlier (Long-Term Residents)
Census Tract 755.04	614	360	547
	(40.4%)	(23.7%)	(35.9%)
Census Tract 754.03	1,074	838	557
	(43.5%)	(33.9%)	(22.5%)
Census Tract 755.05	582	347	335
	(46%)	(27.5%)	(26.6%)
Census Tract 744.08	910	620	89
	(56.2%)	(38.3%)	(5.5%)
Census Tract 755.14	667	394	117
	(56.6%)	(33.4%)	(9.9%)

Source: 2013-2017 ACS 5-Year Estimates (2017)

Transit Dependency

The transit-dependent population is typically described as the population that relies on public transportation for travel. The transit-dependent population may include the disabled, the elderly, the young, low-income individuals, and households without vehicles available. Given that transit dependency can be attributed to a combination of factors, including age, income level, and ability to drive, transit-dependent populations are often difficult to identify based on census data because these groups often overlap. In an effort to avoid miscounting such populations, transit dependency was calculated by determining the number of persons in households that are eligible to drive, but do not have access to a vehicle. This number was calculated by taking the number of residents aged 15 and over (the approximate population eligible to drive) within a geographic area, subtracting the number of persons living in group quarters (e.g., college and university dormitories, skilled nursing facilities, correctional facilities, and other group living environments where driving is not typically required), subtracting the number of vehicles available, and then dividing the difference by the number of residents aged 15 and over.

Table 2.3-6 shows the percentage of transit-dependent population in Orange County, the study area cities, and the study area census tracts. As shown in Table 2.3-6, 17.5 percent of the County's population is transit-dependent. The percentage of transit-dependent population in the cities of Orange and Tustin (16.7 percent and 21.4 percent, respectively) are similar to that of the County (17.5 percent); however, in the cities of Anaheim and Santa Ana, the percentage of transit-dependent population is much greater (25.6 percent and 34.4 percent, respectively). Of the 17 census tracts in the study area, 9 exhibit higher transit-dependent populations than the County (17.5 percent) but are generally consistent with the study area cities overall. Census Tracts 762.02 (13.4 percent), 219.15 (3.7 percent), 758.13 (4.7 percent), 758.05 (11.5 percent), 758.06 (15.8 percent), 758.07 (15.2 percent), 758.08 (6.8 percent), and 755.04 (17.5 percent) exhibit transit-dependency percentages that are less than or equal to the County overall.

Area	Transit-Dependent Population ¹
County	
Orange County	17.5%
Study Area Cities	
Anaheim	25.6%
Orange	16.7%
Santa Ana	34.4%
Tustin	21.4%
Study Area Census Tracts	
Census Tract 762.02	13.4%
Census Tract 219.15	3.7%
Census Tract 758.13	4.7%
Census Tract 758.11	25.4%
Census Tract 758.12	21.6%
Census Tract 758.15	20.6%
Census Tract 758.05	11.5%
Census Tract 758.16	26.2%
Census Tract 758.06	15.8%
Census Tract 758.07	15.2%
Census Tract 758.08	6.8%
Census Tract 757.01	22.4%
Census Tract 755.04	17.5%
Census Tract 754.03	22.1%
Census Tract 755.05	18.5%
Census Tract 744.08	32.9%
Census Tract 755.14	38.3%

Table 2.3-6: Transit Dependency

Source: 2013-2017 ACS 5-Year Estimates (2017)

¹ The transit-dependent population was calculated by taking the number of residents aged 15 and over, subtracting the number of persons living in group quarters, subtracting the number of vehicles available, and then dividing the difference by the number of residents aged 15 and over.

Community Cohesion Summary

Indicators for a community that has a high degree of cohesion are high rates of ethnic homogeneity and home ownership, and high percentages of elderly residents, long-term residents, households of two or more people, and transit-dependent residents. Census Tract 755.14 has a higher percentage of transit-dependent population (38.3 percent) than the County and the study area cities; however, Census Tract 755.14 also demonstrates low proportion of owner-occupied residences (16.1 percent owner-occupied versus 83.9 percent renter-occupied) and relatively short housing tenure (56.6 percent of householders moved into their units in 2010 or later, higher than the county and study area cities), indicating a highly transient population. Census Tracts 219.15, 758.13, 758.07, 758.08, and 755.04 have a high rate of owner-occupied residences, above-average racial/ethnic homogeneity (more than 67 percent of the population is White), higher percentages of its population over 65 years old (12 percent and more), and higher percentages of long-term residents (more than 30 percent) than the County and the study area cities. Based on these indicators, Census Tracts 219.15, 758.13, 758.07, 758.04 are

concluded to have reasonably high levels of community cohesion. Community cohesion is relatively low within the other 12 study area census tracts.

2.3.1.3 Environmental Consequences

2.3.1.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

The proposed project would require two TCEs (see Figure 1.3-1). One TCE will be required from the Village Apartments and would impact a residential carport, which houses fifteen parking spaces and storage cabinets. Use of the effected parking spaces is expected to be maintained through temporary restriping and personal property from the storage cabinets would be temporarily relocated for the duration of the construction. The carport will be removed by the project contractor and the owner will be reimbursed for the cost of a carport replacement. An additional TCE will be required from a small, vacant parcel owned by A-H properties. This TCE is situated along the SR 55 right of way between the Village Apartments parcel to the south and the medical office building to the north. No buildings or access would be affected. Construction-related closures would be short-term, and the increased travel times and distances would result in minimal disruption to neighborhoods and businesses adjacent to the project. Access to all nearby neighborhoods and businesses would be maintained during construction. After construction, the TCE would be restored to its original pre-project or better condition.

Temporary impacts during construction activities associated with construction equipment noise and air emissions at residences and businesses adjacent to SR 55 would cease when the construction of the project is complete.

No Build Alternative

The proposed improvements would not be constructed under the No Build Alternative. Therefore, no temporary impacts related to community character and cohesion would occur.

2.3.1.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

The Build Alternative would result in beneficial impacts related to community character and cohesion, as the project improvements would improve access and connectivity and decrease travel times. Furthermore, the Build Alternative would provide operational improvements for emergency services in the four study area cities, as mobility would improve over existing conditions. Improvements associated with the Build Alternative would take place within an existing roadway and Caltrans right-of-way. The Build Alternative would not create any new or exacerbate any existing physical divisions in the study area or in the cities in the study area. Therefore, permanent impacts to community character and cohesion would be minimal.

No Build Alternative

The proposed improvements would not be constructed under the No Build Alternative. Therefore, no permanent impacts related to community character and cohesion would occur. However, traffic congestion on SR 55 would worsen, which may result in impacts to community character and cohesion in the communities directly adjacent to the project limits of SR 55.

2.3.1.4 Avoidance, Minimization, and/or Mitigation Measures

Temporary construction impacts would be minimized by Project Feature PF-T-1 and PF-T-2 as discussed in Section 2.5, Traffic and Transportation/Pedestrian and Bike Facilities. Project Feature T-1 requires development and implementation of a Transportation Management Plan (TMP) by the construction contractor during project construction to address short-term traffic circulation and access effects during project construction. Project Feature T-2 requires the construction contractor to coordinate with OCTA Central Communications to avoid and minimize OCTA bus routes from being affected by construction activities.

Temporary visual impacts would be minimized through the implementation of Project Feature PF-VIS-1, which is discussed in Section 2.6, Visual and Aesthetics. The visual quality of the existing corridor will be slightly altered by the proposed project. PF-VIS-1 requires architectural treatments and features be included in the final project design to minimize the loss of, and improve the visual quality on, the project segment of SR 55.

Temporary air quality impacts would be minimized based on implementation of Project Features AQ-1 through AQ-13, which are provided in Section 2.13, Air Quality. These measures require the control of dust and equipment emissions during construction of the Proposed Project.

Temporary noise impacts would be minimized based on implementation of Project Features N-1 and NOI-1, which are discussed in Section 2.14, Noise. Project Feature N-1 requires that noise from construction activities conform to the Caltrans Standard Specifications, Section 14-8.02, "Noise Control."

Operational noise impacts would have been attenuated by noise abatement in the form of a barrier located along an apartment complex along Tustin Avenue on the southbound side of SR 55 between 4th Street and 17th Street, with respective lengths and average heights of 6 to 22 feet. Measure NOI-1 provided the determination of Noise Barrier No. 1.1 to be feasible and reasonable. During the noise barrier survey process, one response was received for Noise Barrier 1.1. Based on the result of the survey, the benefitted receptor does not support inclusion of the noise barrier. As a result, Caltrans does not intend to incorporate Noise Barrier No. 1.1 as part of the project.

2.3.2 Relocations and Real Property Acquisition

2.3.2.1 Regulatory Setting

The Department's Relocation Assistance Program is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act), and 49 CFR Part 24. The purpose of the Relocation Assistance Program is to ensure that persons displaced because of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole.

All relocation services and benefits are administered without regard to race, color, national origin, persons with disabilities, religion, age, or sex. Please see Appendix B for a copy of the Department's Title VI Policy Statement.

2.3.2.2 Affected Environment

The study area for relocations and real property acquisition includes census tracts located adjacent to the project alignment traversing through the cities of Anaheim, Orange, Santa Ana, Tustin, and unincorporated areas in the County of Orange. Specifically, 17 census tracts are adjacent to the project alignment (Census Tracts 762.02, 219.15, 758.13, 758.11, 758.12, 758.05, 758.15, 758.16, 758.06, 758.07, 758.08, 757.01, 754.03, 755.04, 755.05, 744.08, and 755.14), as shown previously on Figure 2.3-1. As described in Section 2.1, Land Use, the existing land uses in the study area east of SR 55 is dominated by single-family residential land uses, with some education, open space and recreation, and commercial and services land uses, while the western side of SR 55 contains a mix of single and multi-family residential, commercial and services, facilities, general office, and open space and recreation uses.

2.3.2.3 Environmental Consequences

2.3.2.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

The proposed project would require two TCEs (see Figure 1.3-1) described below in Table 2.3-7. One TCE will be required from the Village Apartments and would impact a residential carport, which houses fifteen parking spaces and storage cabinets. Use of the affected parking spaces is expected to be maintained through temporary restriping and personal property from the storage cabinets would be temporarily relocated for the duration of the construction. The carport will be removed by the project contractor and the owner will be reimbursed for the cost of a carport replacement. An additional TCE will be required from a small, vacant parcel owned by A-H properties. This TCE is situated along the SR55 right of way between the Village Apartments parcel to the south and the medical office building to the north. No buildings or access would be affected. Construction-related closures would be short-term, and the increased travel times and distances would result in minimal disruption to neighborhoods and businesses adjacent to the project. Access to all nearby neighborhoods and businesses would be maintained during construction. Therefore, the Build Alternative would not result in adverse impacts to any privately-owned land during construction.

Table 2.3-7: Anticipated Temporary	Construction Easements
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No.	Owner	APN	Property Type	Current Use	Acquisition Area (square feet)	Acquisition Type
1	A-H Properties	400-021-07	Commercial	Vacant	579	TCE
2	Village Apartments	400-021-10	Multi-Family	Multi-Family	4,209	TCE

No Build Alternative

The proposed improvements would not be constructed under the No Build Alternative. Therefore, no temporary impacts related to relocations and real property acquisition would occur.

2.3.2.3.2 Permanent Impacts

No Build Alternative

The No Build Alternative would not construct any improvements to SR 55 and therefore would not require the temporary use of any privately owned land for TCEs or staging areas.

Build Alternative (Preferred Alternative)

All staging would occur within Caltrans' right-of-way, and no permanent property acquisition or relocations would be required.

2.3.2.4 Avoidance, Minimization, and/or Mitigation Measures

After construction, the TCEs would be restored to their original pre-project or better conditions. The project would not result in any permanent relocations or real property acquisitions. Therefore, no avoidance, minimization, or mitigation measures are required.

2.3.3 Environmental Justice

2.3.3.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President William J. Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services (DHHS) poverty guidelines (DHHS 2019). For 2019, this was \$25,750 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964, and related statutes, have also been included in this project. The California Department of Transportation's commitment to upholding the mandates of Title VI is demonstrated by its Title VI Policy Statement, signed by the Director, which can be found in Appendix B of this document.

2.3.3.2 Affected Environment

This section is based on information from the census tract information available from the U.S. Census Bureau: the 2010 Census and the 2013 - 2017 ACS)¹ The project area includes census tracts located within and adjacent to the project alignment traversing through the cities of Anaheim, Orange, Santa Ana, and Tustin, and unincorporated areas in the County of Orange. Specifically, 17 census tracts are adjacent to the project alignment (Census Tracts 762.02, 219.15, 758.13, 758.11, 758.12, 758.05, 758.15, 758.16, 758.06, 758.07, 758.08, 757.01, 754.03, 755.04, 755.05, 744.08, and 755.14) and shown on Figure 2.3-1.

¹ The ACS is an ongoing survey conducted by the United States Census Bureau that provides data every year, giving communities current information they need to plan investments and services. Information from the survey generates data that help determine how more than \$400 billion in federal and State funds are distributed each year.

"Low-income" is defined based on the DHHS poverty guidelines. For 2019, this was \$25,750 for a family of four. Median household income and the percentages of residents living below the poverty level for the census tracts located adjacent to the project alignment; the County; and the cities of Anaheim, Orange, Santa Ana, and Tustin are summarized in Table 2.3-8. Based on the 2013 - 2017 ACS 5-Year Estimates, the median household income in Orange County was \$81,851 in 2017. The median household income in the city of Orange (\$83,500) is higher than Orange County, while the median household incomes in the cities of Anaheim, Santa Ana, and Tustin (\$65,313, \$57,151, and \$73,567, respectively) are lower than Orange County. As shown in Table 2.3-8, the percentage of persons living below the poverty level was substantially higher in the city of Santa Ana (19.5 percent) than in Orange County (12.1 percent), while the percentages of persons living below the poverty level in the cities of Orange and Tustin (12.5 percent and 13.6 percent, respectively) were similar to that of Orange County. The cities of Anaheim and Santa Ana exhibited a higher percentage of persons living below the poverty level (16.0 percent and 19.5 percent respectively) than Orange County.

Area	Median Household Income	Low-Income Population	Percentage of Population	
Orange County	\$81,851	381,854	12.1%	
City of Anaheim	\$65,313	55,841	16.0%	
City of Orange	\$83,500	17,536	12.5%	
City of Santa Ana	\$57,151	65,226	19.5%	
City of Tustin	\$73,567	10,881	13.6%	
Census Tract 762.02	\$82,805	442	7.4%	
Census Tract 219.15	\$118,438	149	3.8%	
Census Tract 758.13	\$117,813	273	5.6%	
Census Tract 758.11	\$73,357	593	18.1%	
Census Tract 758.12	us Tract 758.12 \$70,250		16.7%	
Census Tract 758.05	\$75,159	951	22.7%	
Census Tract 758.15	\$78,351	575 10.8%		
Census Tract 758.16	\$64,048	683	17.2%	
Census Tract 758.06	\$77,546	1,031	15.7%	
Census Tract 758.07	nsus Tract 758.07 \$90,868		7.1%	
Census Tract 758.08	ensus Tract 758.08 \$124,813		6.2%	
Census Tract 757.01	3 Tract 757.01 \$82,591		6.0%	
Census Tract 754.03	\$66,532	539	7.5%	
Census Tract 755.04	\$66,797	285	7.0%	
Census Tract 755.05	\$70,938	293	8.3%	
Census Tract 744.08	\$45,245	936	14.8%	
Census Tract 755.14	\$42,708	1,150	29.8%	

 Table 2.3-8: Median Household Income and Low-Income Population

Source: 2013-2017 American Community Survey (ACS) 5-Year Estimates (2017)

Overall, low-income individuals comprise a similar or higher percentage of the population in seven of the 17 adjacent census tracts (Census Tract 758.11 with 18.1 percent, Census Tract 758.12 with 16.7 percent, Census Tract 758.05 with 22.7 percent, Census Tract 758.16 with

17.2 percent, Census Tract 758.06 with 15.7 percent, Census Tract 744.08 with 14.8 percent, and Census Tract 755.14 with 29.8 percent) compared to Orange County.

The term "minority" is defined as persons who identify themselves as Black/African-American, Asian, Native Hawaiian/Pacific Islander, Native American/Native Alaskan, or of Hispanic/Latino origin. The population in the census tracts located adjacent to the project alignment; the County; and the cities of Anaheim, Orange, Santa Ana, and Tustin that consist of racial minorities and Hispanics/Latinos residents are summarized in Table 2.3-9.

Area	Racial Minorities	Percentage of Racial Minorities	Hispanic/Latino Residents	Percentage of Hispanic/Latino Residents
Orange County	1,179,474	39.2%	1,012,973	33.7%
City of Anaheim	159,028	47.3%	177,467(52.8%
City of Orange	44,894	33.0%	52,014	38.1%
City of Santa Ana	175,690	54.1%	253,928	78.2%
City of Tustin	35,811	47.4%	30,024	39.7%
Census Tract 762.02	1,859	32.1%	2,246	38.6%
Census Tract 219.15	1,165	29.3%	567	14.2%
Census Tract 758.13	1,673	32.9%	1,268	25.0%
Census Tract 758.11	1,307	39.2%	1,919	57.6%
Census Tract 758.12	1,812	27.6%	3,474	52.9%
Census Tract 758.05	1,287	30.6%	2,061	48.9%
Census Tract 758.15	1,567	30.2%	2,147	41.5%
Census Tract 758.16	1,514	40.8%	1,643	44.3%
Census Tract 758.06	2,327	38.1%	2,945	48.1%
Census Tract 758.07	1,430	33.0%	1,754	40.6%
Census Tract 758.08	666	19.5%	802	23.6%
Census Tract 757.01	2,441	35.5%	3,031	44.1%
Census Tract 754.03	3,093	43.7%	4,583	64.7%
Census Tract 755.04	983	24.3%	1,155	28.6%
Census Tract 755.05	1,344	37.4%	1,478	41.1%
Census Tract 744.08	3,188	59.0%	4,212	78.0%
Census Tract 755.14	2,150	58.1%	2,455	66.3%

 Table 2.3-9: Racial Minority and Hispanic/Latino Populations

Source: 2010 Census

The racial minority population percentages in the census tracts adjacent to the project alignment; Orange County; and the cities of Anaheim, Orange, Santa Ana, and Tustin were calculated by determining the number of Black/African-American, Asian, American Indian/Native Alaskan, and Hawaiian/Pacific Islander populations of one race only and two or more as identified by the 2010 Census. As shown in Table 2.3-9, racial minorities comprise approximately 39 percent of the population in Orange County. Racial minorities in the project area cities range from approximately 33 percent of the population in Orange to approximately 54 percent of the population in Santa Ana. Overall, racial minorities comprise a similar or higher percentage of the population in five of the 17 adjacent census tracts (Census Tracts 758.11 with 39.2 percent, 758.16 with 40.8 percent, 754.03 with 43.7 percent, 744.08 with 59 percent, and 755.14 with 58.1 percent, respectively) compared to Orange County. As shown in Table 2.3-9, Hispanics/Latinos represent approximately 34 percent of the County population. Hispanics/Latinos in the project area cities range from approximately 38 percent of the population in Orange to approximately 78 percent of the population in Santa Ana. Overall, Hispanics/Latinos comprise a similar or higher percentage of the population in 13 of the 17 adjacent census tracts compared to Orange County.

2.3.3.3 Environmental Consequences

2.3.3.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

Construction activities associated with the Build Alternative would temporarily affect residents and businesses throughout the entire project area. Although construction impacts would also affect low-income and minority populations, the impacts would not be considered disproportionate and would affect all people within and adjacent to the project area. Impacts would include temporary disruptions of local traffic patterns and increased traffic congestion, noise levels, and dust. Access to all nearby neighborhoods and businesses would be maintained during construction. As noted in Section 2.5, Traffic and Transportation/Pedestrian and Bicycle Facilities, the project would include a Transportation Management Plan (TMP) under PF-T-1 to address ramp and/or lane closures and associated detour routes.

As discussed in Section 2.12, Hazardous Waste Materials, the implementation of PF-HAZ-1 through PF-HAZ-6 would avoid and/or minimize potential effects related to hazardous materials and hazardous wastes during construction of the Build Alternative; and the surrounding community, including environmental justice populations, would not be disproportionately impacted.

The project construction activities would also provide jobs that would benefit local economies, including low-income and minority populations.

No Build Alternative

Under the No Build Alternative, the temporary construction-related adverse effects on all populations, including low-income and minority (environmental justice) populations, during construction of the Build Alternative, would not occur. No additional jobs would be created under the No Build Alternative. No indirect or secondary impacts on communities and minority populations would result from implementation of the No Build Alternative.

2.3.3.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

The Build Alternative would not require the permanent acquisition of residential or business properties or the displacement of residents or businesses. Indirect or secondary impacts are not anticipated to occur. Therefore, the Build Alternative would not result in adverse effects on

minority and low-income populations related to the acquisition of residential or business uses and/or the displacement of residents or businesses.

The Build Alternative would result in improvements to an existing major freeway corridor and include noise levels consistent with the current noise levels associated with SR 55.

The Build Alternative would directly benefit all study area residents, including low-income and minority populations, by improving mobility and circulation throughout the study area and central Orange County. Another direct impact from the Build Alternative would improve traffic patterns and mobility for all residents, including low-income and minority persons. Transit-dependent populations, including low-income and minority individuals, would also benefit from improved travel speeds for bus routes operating on SR 55.

The Build Alternative would not cause disproportionately high and adverse effects on any minority or low-income populations per EO 12898 regarding environmental justice.

No Build Alternative

No improvements to SR 55 other than routine maintenance are proposed under the No Build Alternative. Therefore, the No Build Alternative would not result in property acquisition or permanent increases in noise levels that would impact populations in the area, including low-income and minority populations. However, the No Build Alternative would also not provide transportation benefits to populations in the area, including low-income and minority populations, that would occur under the Build Alternative. Potential indirect impacts to the project area populations and communities could result from the continued degradation of traffic flow and capacity associated with congestion on SR 55.

2.3.3.4 Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, the Build Alternative will not cause disproportionately high and adverse effects on any minority or low-income populations in accordance with the provisions of EO 12898. No further environmental justice analysis or avoidance, minimization and/or mitigation measures are required.

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2.4 Utilities and Emergency Services

2.4.1 Affected Environment

This section describes the existing utilities and emergency services facilities and providers in the project footprint (the maximum disturbance limits for the Build Alternative [Preferred Alternative]) and Study Area extending 0.5 mile from the limits of the project footprint.

2.4.1.1 Utilities

Within the project area there are overhead electric distribution facilities, overhead telecommunication distribution facilities, cable television distribution facilities, and underground sewer pipelines. The locations of utilities have been identified from utility and freeway as-built drawings and field reviews. Utility owners with existing facilities known to exist within the Study Area include the following:

- AT&T
- CableVision of Orange
- Charter / Spectrum
- City of Anaheim Electric
- City of Anaheim Telecom
- City of Orange Sewer
- City of Orange Telecom
- City of Orange Water
- City of Santa Ana Sewer
- City of Tustin Water
- East Orange County Water District (EOCWD
- Level 3 Communication
- Orang County Water District (OCWD)
- Questar
- Qwest Communication
- Santa Ana Valley Irrigation
- Southern California Edison (SCE) Distribution
- Southern California Edison (SCE) Transmission
- Southern California Gas Company
- Southern California Water Company
- Time Warner Cable
- United States Navy Fuel
- Verizon (ATC)

2.4.1.2 Fire Services

Fire protection and emergency medical/paramedic services in the cities of Santa Ana and Tustin and unincorporated County of Orange are provided by the Orange County Fire Authority under contract with those cities. The cities of Orange and Anaheim have their own fire departments. No fire stations are located within the Study Area.

2.4.1.3 Police Services

Police protection services in each of the cities are provided their own police departments. The County of Orange Sheriff's Department serves the unincorporated areas of County of Orange. No police station is located within 0.5 mile of the Study Area.

Police services on freeways in California, including SR 55, are provided by the California Highway Patrol (CHP). One CHP office (675) is located within the Study Area at 2031 East Santa Clara Avenue in the City of Santa Ana.

2.4.2 Environmental Consequences

2.4.2.1 Temporary Impacts

Build Alternative (Preferred Alternative)

The construction of the Build Alternative could affect existing underground and overhead utility facilities, which could require protection in-place, removal, or relocation (see Utility Plans in Attachment D of the Draft Project Report and Utility Conflict Matrix in Attachment M of the Draft Project Report). No direct or indirect short-term adverse impacts are anticipated during project construction.

Project Feature PF-UES-1 has been incorporated into the Build Alternative to minimize the potential temporary adverse effects of the project construction on utilities.

PF-UES-1: During final design, utility relocation plans will be prepared in consultation with the affected utility providers/owners for those utilities that will need to be relocated, removed, or protected in-place. If relocation is necessary, the final design will focus on relocating utilities within existing public rights-of-way and/or easements. The final design will focus on relocating those facilities to minimize environmental impacts as a result of project construction and ongoing maintenance and repair activities. Utility relocations are anticipated to be completed by the various utility owners prior to or during construction.

Prior to utility relocation activities, the Contractor will coordinate with affected utility providers regarding potential utility relocations and inform affected utility users in advance about the date and timing of potential service disruptions.

During construction of the Build Alternative, construction delays to emergency services may occur. No reductions in the number of mainline traveled lanes during peak-hour period are anticipated. Construction of the project is anticipated to require local overnight ramp closures to make improvements on the ramps and during overhead sign installation. Temporary lane closures are also necessary during construction staging when barriers are moved into position, when lanes are being restriped, and when the freeway is being restored to its completed condition. Temporary overnight full roadway closure on Lincoln Avenue would be required for bridge falsework (installation and removal) and construction. Temporary full freeway closure will be needed for overhead sign construction at various locations on SR 55. These temporary closures will be limited to off-peak hours, and adequate notification would be provided to the public and appropriate service purveyors.
When closures are necessary, detour routes would be provided using the local arterial street network. Emergency services providers could experience travel delays when traveling to/from emergency scenes during closures.

The following project feature has been incorporated in the Build Alternative to minimize the potential temporary adverse effects of the project construction on emergency services:

PF-UES-2 Prior to and during construction, the Contractor will coordinate all temporary mainline, ramp, and arterial roadway closures and detour plans with law enforcement, fire protection, and emergency medical service providers to minimize temporary delays in emergency response times, including the identification of alternative routes for emergency vehicles and routes across the construction areas that are developed in coordination with the affected agencies.

In addition, temporary construction impacts to emergency services would be minimized by Project Feature PF-T-1 in Section 2.5, Traffic and Transportation/Pedestrian and Bicycle Facilities. Project Feature PF-T-1 requires development and implementation of a TMP during construction of the Build Alternative to address traffic delays; maintain traffic flow in the SR 55 corridor; manage detours and temporary road, lane, and ramp closures; and provide ongoing information to the public.

No Build Alternative

No improvements to SR 55 other than routine maintenance are proposed under the No Build Alternative. The freeway would remain as is, with the exception of other proposed projects that are under development or currently under construction. Therefore, the No Build Alternative would not result in temporary adverse effects on utilities and emergency services.

2.4.2.2 Permanent Impacts

Build Alternative (Preferred Alternative)

As required by Caltrans and the respective standards of the affected cities, emergency access would be maintained or provided as part of the final design of the Build Alternative. The improvements to SR 55 under the Build Alternative would reduce traffic congestion and result in decreased travel times on SR 55 between I-5 and SR 91 compared to the No Build Alternative. These improvements in traffic flow are likely to improve emergency response times within the Study Area. Indirect or secondary impacts are not anticipated to occur. Therefore, the Build Alternative would not directly result in adverse effects on emergency services and providers.

Any relocation or other effects to utility facilities under the Build Alternative would occur during the final design or construction phase. All existing utility facilities would be anticipated to be maintained under the Build Alternative. The Build Alternative would not result in an increased demand for domestic water services, wastewater facilities, or solid waste disposal. Therefore, the Build Alternative would not result in permanent adverse effects on utility providers or their facilities.

No Build Alternative

No improvements to SR 55 are proposed under the No Build Alternative other than routine maintenance. The freeway would remain as is, with the exception of other proposed projects that are under development or currently under construction. No indirect or secondary impacts on utilities and emergency services would result from implementation of the No Build Alternative. Therefore, the No Build Alternative would not result in permanent adverse effects related to emergency services and utility services and their facilities.

2.4.3 Avoidance, Minimization, and/or Mitigation Measures

The project will incorporate project features as outlined above in Section 2.4.2.1, Temporary Impacts, to help avoid and/or minimize potential impacts. No additional avoidance, minimization, and/or mitigation measures other than the Standard Project Features are required.

2.5 Traffic and Transportation/Pedestrian and Bicycle Facilities

2.5.1 Regulatory Setting

The Department, as assigned by the FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, USDOT issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the USDOT regulations (49 CFR Part 27) implementing Section 504 of the Rehabilitation Act (29 USC 794). The FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to federal-aid projects, including Transportation Enhancement Activities.

2.5.2 Affected Environment

This section is based on the following traffic studies prepared for the project: Final Traffic/Circulation Impact Report (January 2017), Final Traffic Operations Report (July 2018), Final Traffic Volume Report (February 2018), and the Traffic Analysis Addendum (August 2019).

2.5.2.1 Existing Facilities

Roadway Facilities

SR 55, also known as the Costa Mesa Freeway, is a north-south corridor traversing Orange County. The SR 55 corridor is 17.9 miles long and passes through six cities in an urbanized setting, beginning at Pacific Coast Highway (SR 1) at the south end and ending at SR 91 at the north end. SR 55 was originally constructed in 1962 as a four-lane freeway, with the portion north of Chapman Avenue opening in 1962 and the segment south of Chapman Avenue opening in 1966. Since then, two additional general purpose lanes and a HOV lane have been added in each direction. SR 55 was extended to 19th Street in Costa Mesa in 1990, and the first direct HOV/ Transit Way Connector at the I-5/SR 55 interchange was opened in late 1995. The HOV direct connectors at the I-405/SR 55 interchange were completed in early 2005. A few recent improvements include an auxiliary lane in the southbound direction between the Dyer Road on-ramp and MacArthur Boulevard off-ramp, which was constructed in 2010, and between the Edinger Avenue on-ramp and East Dyer Road off-ramp in 2012. In addition, the HOV lane was striped throughout its length within the project limits to allow continuous access with the exception of the transition areas to the SR 22, I-405, and I-5 HOV connectors.

Within the project limits, the SR 55 corridor currently has three to five general purpose lanes in each direction. HOV and auxiliary lanes also exist, where feasible, in each direction. Between I-5

and SR 91 there are five local interchanges on SR 55 at 4th Street/Irvine Boulevard, 17th Street, Chapman Avenue, Katella Avenue, and Lincoln Avenue. One freeway-to-freeway interchange at SR 22 is located between 17th Street and Chapman Avenue. The project segment of SR 55 traverses a highly urbanized, densely populated area with closely spaced interchanges with arterial streets and other freeways. The operational characteristics of the project segment of SR 55 are influenced by a concentration of merge, diverge, and weaving operations associated with those tightly spaced interchanges.

Pedestrian and Bicycle Facilities

Within site boundaries, pedestrians and bicyclists can currently cross the project segment of SR 55 at the following locations where arterial streets cross SR 55:

- Main Street overcrossing
- First Street overcrossing
- Irvine Boulevard/4th Street overcrossing
- 17th Street overcrossing
- Santa Clara Avenue overcrossing
- Fairhaven Avenue overcrossing
- La Veta Avenue overcrossing
- Chapman Avenue undercrossing
- Walnut Avenue overcrossing
- Collins Avenue overcrossing
- Katella Avenue undercrossing
- Taft Avenue undercrossing
- Meats Avenue overcrossing
- Lincoln Avenue undercrossing

These arterials generally include sidewalks on at least one side of the road segments as they cross SR 55. No designated off-street bike paths/trails are present on these arterials; however, Class II bike lanes exist along Meats Avenue and Walnut Avenue, and Class III bike routes exist along Taft Avenue. In addition, the City of Tustin General Plan designates Santa Clara Avenue as future Class II bike lanes; and the City of Orange Bikeway Master Plan also designates Lincoln Avenue, La Veta Avenue, and Fairhaven Avenue as future Class II bike lanes.

2.5.2.2 Study Area

The study corridor (Figure 2.5-1) covers SR 55 between I-5 and SR 91 (from Post Mile 10.4 to Post Mile R17.9) and includes the freeway-to-freeway connectors at the three interchanges at SR 55/I-5, SR 55/SR 22, and SR 55/SR 91. The study locations consist of the SR 55 mainline segments and ramp junctions in the study area. The study area also consists of ramp terminal intersections, intersections directly adjacent to the ramp terminal intersections, and several local intersections.



Figure 2.5-1. Study Corridor



Figure 2.5-1 Study Corridor

Study Freeway Facilities

- 1. Freeway mainline segments on SR 55 between I-5 and SR 91
- 2. The on- and off-ramps (including the freeway-to-freeway connectors) at the study interchanges of I-5, 4th Street/Irvine Boulevard, 17th Street, SR 22, Chapman Avenue, Katella Avenue, Meats Avenue (future), Lincoln Avenue, and SR 91

Study Intersections

- 1. Tustin Street / SR 55 southbound off-ramp
- 2. Tustin Street / Lincoln Avenue
- 3. Tustin Street / SR 55 southbound on-ramp
- 4. Santiago Boulevard / Lincoln Avenue
- 5. Santiago Boulevard / SR 55 northbound ramps
- 6. Meats Avenue / Tustin Street
- 7. Meats Avenue / SR 55 southbound ramp (future)
- 8. Meats Avenue / SR 55 northbound ramp (future)
- 9. Meats Avenue / Santiago Boulevard
- 10. Katella Avenue / Tustin Street
- 11. Katella Avenue / SR 55 southbound ramp
- 12. Katella Avenue / Sacramento Street / SR 55 northbound off-ramp
- 13. Katella Avenue / Handy Street
- 14. Chapman Avenue / Tustin Street
- 15. Chapman Avenue / North Wayfield Street
- 16. Chapman Avenue / SR 55 southbound ramp
- 17. Chapman Avenue / SR 55 northbound ramp
- 18. Chapman Avenue / Yorba Street
- 19. 17th Street / Tustin Avenue
- 20. 17th Street / Ponderosa Street
- 21. 17th Street / SR 55 southbound ramps / Deodar Street
- 22. 17th Street / SR 55 northbound ramps
- 23. 17th Street / Yorba Street / Carroll Way
- 24. 4th Street / Tustin Avenue
- 25. 4th Street / SR 55 southbound ramps
- 26. 4th Street / SR 55 northbound ramps
- 27. Irvine Boulevard / Yorba Street
- 28. First Street / Tustin Avenue / I-5 southbound connector (future)
- 29. Tustin Street / SR 22 westbound on-ramp (local)
- 30. 17th Street / Enderle Center Drive / Yorba Street (local)
- 31. First Street / Yorba Street / Pacific Street (local)

The SR 55/Meats Avenue interchange is proposed to be completed by Year 2023, as stated in the SCAG's 2016 financially constrained RTP/SCS; however, due to funding uncertainty, completion of this interchange will likely be postponed beyond 2035. Based on conversations with and concurrence from the City of Orange, Caltrans District 12, and OCTA, the SR 55/Meats Avenue interchange would be excluded from the Opening Year 2035 analysis but would be included as future roadway improvements under Design Year 2055 conditions.

2.5.2.3 Study Scenarios

Two project alternatives including the No Build alternative were analyzed under both Opening Year 2035 and Design Year 2055 conditions. A series of improvements proposed for the SR 55 corridor was evaluated, and concurrence to carry one Build Alternative forward for this IS/EA was concluded. The project descriptions of the project alternatives are presented in the following section. The study scenarios for traffic operations analysis include the following:

- 1. Existing (2017) Conditions
- 2. Opening Year (2035) No Build Alternative
- 3. Opening Year (2035) Build Alternative
- 4. Design Year (2055) No Build Alternative
- 5. Design Year (2055) Build Alternative

2.5.2.4 Methodology

Traffic Forecasting Methodology

The Orange County Transportation Analysis Model (OCTAM) version 4.0 TransCAD model was used to develop the traffic forecasts for this project. The SCAG's 2016 financially constrained RTP/SCS, adopted in April 2016, and Amendment 1, adopted in April 2017 (SCAG 2017), were used to develop the baseline roadway network. The OCTAM 4.0 model was then updated to reflect the projects listed in the 2016 financially constrained RTP/SCS and Amendment 1 using the descriptions stated in the RTP/Amendment 1 plus additional available project details. The project completion dates identified in the RTP/Amendment 1 were used to determine inclusion of these projects as future roadway improvements when developing the Opening Year (2035) and Design Year (2055) traffic forecasts. The only exception is the SR 55/Meats Avenue interchange. This interchange is proposed to be completed by Year 2023 as stated in the RTP/SCS; however, due to funding uncertainty, completion of this interchange will likely be postponed beyond 2035. Based on conversations with and concurrence from the City of Orange, Caltrans, and OCTA, the SR 55/Meats Avenue interchange would be excluded from the Opening Year (2035) analysis but would be included as future roadway improvements under Design Year (2055) conditions.

In addition to the network improvements, coordination with OCTA and the corridor cities ensures that proposed local development projects are reflected in the OCTAM model, including the proposed senior housing development at the south side of the Tustin Avenue and First Street intersection in the City of Santa Ana and several proposed development projects in the City of Tustin, including the Specific Plan studies in Downtown (Old Town), the Red Hill Avenue corridor north and south of I-5, and Tustin Legacy.

The OCTAM model has Base Year (2012) and Future Year (2040) scenarios. OCTA's Regional Modeling and Traffic Operations Section was used to develop and finalize the Future Year (2040) models consistent with the SCAG's 2016 financially constrained RTP. Once approved by OCTA, the 2040 OCTAM model was then used to develop model scenarios for the No Build and Build Alternative to forecast the Design Year (2055) traffic volumes. In addition, another set of models was developed to estimate traffic forecasts for the Opening Year (2035) conditions, under which the projects with completion date of beyond Year 2035 were removed from the models to reflect the 2035 buildout conditions.

Traffic forecasts for study locations were developed using the difference methodology which is consistent with methodologies delineated in the National Cooperative Highway Research Program Report (NCHRP) 255 published by the Transportation Research Board (TRB): Highway Traffic Data for Urbanized Area Project Planning and Design (Pedersen and Samdahl 1982). The Base Year (2012) and Future Year (2040) models were used to calculate the annual growth at study facilities, which was then applied to existing (2017) traffic counts to develop the Opening Year (2035) and Design Year (2055) traffic forecasts.

Operations Analysis Methodology

Freeway Analysis: Freeway mainline and ramp junctions were analyzed using the VISSIM microscopic multi-modal traffic flow simulation software. All components of freeway operations (i.e., mainline, on-ramp merge, off-ramp diverge, and weaving sections) operate as a single integrated system with congestion and queues affecting both upstream and downstream traffic operations. VISSIM was used for this operations analysis to capture the effects between all the freeway components and the system-wide measures of effectiveness (MOE). The freeway segments were analyzed using the *Highway Capacity Manual, 6th Edition* (HCM; TRB 2016), and the methodologies contained in VISSIM are consistent with the procedures and methodologies of HCM. The LOS was calculated for each study facility based on density in number of vehicles per hour per lane. Table 2.5-1 describes the LOS thresholds for freeway sections identified in the HCM 6th Edition. The peak-hour density calculations provided are consistent with the definitions from the HCM, which defines four freeway section types: merge, diverge, weave, and basic.

LOS	Description	Mainline (Basic) Density (vplpm) ^a	Ramp/Weave Density (vplpm) ^a	
А	Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	< 11	< 10	
В	Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.	> 11 to 18	> 10 to 20	
С	Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.	> 18 to 26	> 20 to 28	
D	Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort.	> 26 to 35	> 28 to 35	
Е	Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing.	> 35 to 45	> 35 to 45 ^b	
F	Represents a breakdown in flow.	> 45	> 45 ^b	

Table 2.5-1: Freeway LOS Threshold

Notes: vplpm: vehicles per lane per mile

a Density is reported in vehicles per lane per mile.

b The maximum density for ramp junctions and weaving sections under LOS E is not defined in the HCM. The maximum density for basic segments of 45 vplpm was assumed to apply to ramp junctions and weaving sections.
Source: Fehr & Peers (July 2018), p. 19.

Intersection Analysis: Ramp terminal intersections and the intersections adjacent to the ramp terminal intersections were also included and analyzed in the same VISSIM network with the freeway segments in order to capture the interactions between freeway, ramps, and adjacent

arterial intersections. Intersection operations were conducted using methodologies contained in the HCM 6th Edition. The HCM methodology for signalized intersections estimates the average control delay for vehicles at the intersection while the methodology for unsignalized intersections estimates the worst-case movement control delay for two-way stop-controlled intersections and the average control delay for all-way stop-controlled intersections. After the quantitative delay estimates are complete, the methodology assigns a qualitative letter grade that represents the operations of the intersection. These grades range from LOS A (minimal delay) to LOS F (congested conditions). LOS E represents at-capacity operations. Descriptions of the LOS letter grades for both signalized and unsignalized intersections are provided in Table 2.5-2.

Local intersection analysis was completed using the Intersection Capacity Utilization (ICU) methodology. Most jurisdictions in Orange County and the Orange County Congestion Management Program utilize this methodology as the standard approach for evaluating signalized intersection operations. The ICU methodology evaluates the critical movements for each signal and compares that to the critical movement capacity of the intersection, resulting in a volume-to-capacity (V/C) ratio. After the quantitative V/C estimates are complete, the methodology assigns a qualitative LOS grade representing the quality of intersection operations. Descriptions of the LOS letter grades for intersection V/C ratios are also provided in Table 2.5-2.

LOS	Description	Signalized Intersections Delay (seconds/vehicle)	Signalized Intersections Volume/Capacity Ratio	Unsignalized Intersections Delay (seconds/vehicle)
А	Very low delay occurs due to little or no conflicting traffic.	< 10.0	0.00 - 0.60	< 10.0
В	Low delay occurs although conflicting traffic becomes noticeable.	> 10.0 to 20.0	0.61 – 0.70	> 10.0 to 15.0
С	Average delays result from increased conflicting traffic.	> 20.0 to 35.0	0.71-0.80	> 15.0 to 25.0
D	Longer delays occur due to a reduction in available gaps. At signals, individual cycle failures are noticeable.	> 35.0 to 55.0	0.81-0.90	>25.0 to 35.0
E	High delays and extensive queues occur. This value indicates volume-to-capacity ratios. This is considered to be the limit of acceptable delay.	> 55.0 to 80.0	0.91-1.00	> 35.0 to 50.0
F	Delays are unacceptable to most drivers due to over-saturation.	> 80.0	>1.00	> 50.0

Table 2.5-2: Intersection LOS Threshold

Source: Fehr & Peers (July 2018), p. 20.

Analysis Evaluation Criteria

The analysis evaluation criteria described below were used to determine acceptable traffic operating conditions and are based on the level of service policies identified by Caltrans (jurisdiction for freeway mainline/ramp/ramp terminal intersection) and the Cities of Anaheim, Orange, Santa Ana, and Tustin (jurisdiction for local intersections).

Caltrans

The Caltrans' Guide for the Preparation of Traffic Impact Studies (Caltrans 2002) states "Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" (see Appendix "C-3" in the aforementioned guide) on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS". For the purpose of this study, LOS D is assumed to be the criteria for SR 55 mainline segments, on- and off-ramps, and ramp terminal intersections.

City of Anaheim

The City of Anaheim General Plan Circulation Element (City of Anaheim 2018) has established that the LOS should be LOS D or better for major intersections in the city and LOS E or better for Congestion Management Plan (CMP) roadways and intersections.

City of Orange

The City of Orange Traffic Impact Analysis Guidelines (August 2007) states that a volume/capacity ratio of 0.90 (LOS D) shall be the lowest acceptable Service Level at intersections per the City's General Plan Circulation Element and Growth Management Element requirements (City of Orange 2015).

City of Santa Ana

Per the City of Santa Ana General Plan Circulation Element (January 2010), LOS D has been established as the maximum acceptable LOS for major intersections in the city except in major development areas. The CMP establishes LOS E as the maximum level of operation for CMP roadways (freeways and Smart Streets).

City of Tustin

The City of Tustin General Plan Circulation Element (City of Tustin 2017) has established LOS D as a threshold standard to monitor capacity needs for both ADT link volumes and peak-hour volumes, except for designated Smart Streets for which LOS E is the recommended standard for these facilities.

Based on the above LOS policies identified by Caltrans and local jurisdictions, LOS D is considered the criteria for acceptable operations for the purpose of this project.

2.5.2.5 Existing Traffic Operations

Existing traffic conditions described in this section are based on traffic counts and traffic conditions in 2017. All traffic counts were collected when schools were in session. Figure 2.5-2 shows the existing (2017) peak hour and daily traffic volumes for freeway mainline segments and ramps. The study intersection existing peak hour turning movement traffic volumes are displayed in Figure 2.5-3a and Figure 2.5-3b.



Figure 2.5-2. Peak Hour and Daily Traffic Volumes – Existing Conditions



Figure 2.5-3a. Peak Hour Intersection Volumes – Existing (2017) Conditions



Figure 2.5-3b. Peak-Hour Intersection Volumes – Existing (2017) Conditions

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Freeway Operations

Table 2.5-3a and Table 2.5-3b show the AM and PM peak-hour density and LOS for the study freeway mainline segments and ramp junctions on northbound and southbound SR 55, respectively. Traffic congestion with deficient LOS (E and F) currently occurs on southbound SR 55 in the AM peak hour and on northbound SR 55 in the PM peak hour.

During the AM peak hour, most of the study locations on northbound SR 55 operate at LOS D or better, except for the Irvine Boulevard off-ramp, northbound I-5 on-ramp, eastbound 17th Street on-ramp, westbound Katella Avenue on-ramp, and the Lincoln Avenue off-ramp, which operate at LOS E or F conditions. During the PM peak hour, all the study locations on northbound SR 55 experience severe congestion and operate at LOS E or F conditions. Multiple congestion hot spots exist in the northbound direction at 17th Street, SR 22 off-ramp, and SR 91, which result in significant vehicle queues extending from SR 91 throughout the study corridor to I-5 and beyond.

No.	Location	Туре	AM Peak Hour Density ^a	AM Peak Hour LOS	PM Peak Hour Density ^a	PM Peak Hour LOS
1	SR 55 NB: Irvine Blvd off-ramp	Diverge	36.6 ^b	E₽	86.5 ^b	F♭
2	SR 55 NB: NB I-5 on-ramp	Merge	37.2 ^b	ЕÞ	111.1 ^b	F٥
3	SR 55 NB: Irvine Blvd on-ramp to 17th St off-ramp	Weave	32.1	D	86.3 ^b	F٥
4	SR 55 NB: 17th St EB on-ramp	Merge	46.1 ^b	F٥	103.6 ^b	F۵
5	SR 55 NB: 17th St WB on-ramp to SR 22 off-ramp	Weave	28.1	D	70.8 ^b	F٥
6	SR 55 NB: Chapman Ave Bypass off-ramp	Diverge	32.1	D	36.8 ^b	Еb
7	7 SR 55 NB: SR 22 on-ramp to Chapman Ave off- ramp		23.9	С	55.1 ^b	F٥
8	SR 55 NB: Chapman Ave WB off-ramp		25.8	С	54.2 ^b	F۵
9	SR 55 NB: Chapman Ave on-ramp	Merge	23.8	С	77.6 ^b	F۵
10	SR 55 NB: Chapman Ave on-ramp to Katella Ave off-ramp		22.8	С	77.0 ^b	F٥
11	SR 55 NB: Katella Ave off-ramp		24.0	С	78.0 ^b	F۵
12	SR 55 NB: Katella Ave EB on-ramp		27.4	С	111.8 ^b	F۵
13	SR 55 NB: Katella Ave WB on-ramp		36.8 ^b	E₽	104.0 ^b	F۵
14	SR 55 NB: Katella Ave WB on-ramp to Lincoln Ave off-ramp		32.9	D	68.9 ^b	۴Þ
15	SR 55 NB: Lincoln Ave off-ramp	Diverge	37.8 ^b	Еb	70.8 ^b	F٥
16	SR 55 NB: Lane Drop to Lincoln Ave on-ramp	Basic	34.4	D	74.6 ^b	F٥
17	SR 55 NB: Lincoln Ave on-ramp to SR 91 off-ramp		25.6	С	89.3 ^b	F٥

Table 2.5-3a: Existing Northbound SR 55 Freeway Operations

Notes: Ave: Avenue; Blvd: Boulevard; EB: eastbound; LOS: level of service; NB: northbound; SR: State Route; St: Street; WB: westbound

a Density is reported in vehicles per hour per lane.

b **Bold** font indicates unacceptable LOS E or F conditions.

Source: Fehr & Peers (July 2018), p. 32.

No.	Location	Туре	AM Peak Hour Density ^a	AM Peak Hour LOS	PM Peak Hour Density ^a	PM Peak Hour LOS
1	SR 55 SB: SR 91 on-ramp to Lincoln Ave off-ramp	Weave	37.1 ^b	ЕÞ	26.7	С
2	SR 55 SB: Lincoln Ave on-ramp	Merge	82.5 ^b	F٥	40.4 ^b	ЕÞ
3	SR 55 SB: Lincoln Ave on-ramp to Katella Ave off- ramp	Basic	72.5 ^b	۴Þ	26.6	С
4	SR 55 SB: Katella Ave off-ramp	Diverge	78.2 ^b	F٥	26.2	С
5	SR 55 SB: Katella Ave on-ramp to Chapman Ave off-ramp	Weave	78.8 ^b	F۵	27.6	С
6	SR 55 SB: Chapman Ave WB on-ramp	Merge	63.3 ^b	F٥	27.1	С
7	7 SR 55 SB: Chapman Ave EB on-ramp		92.9 ^b	F٥	30.9	D
8	SR 55 SB: SR 22 off-ramp	Diverge	56.7 ^b	F٥	44.6 ^b	F٥
9	SR 55 SB: SR 22 on-ramp	Merge	147.0 ^b	F٥	25.8	С
10	SR 55 SB: 17th St WB off-ramp	Diverge	125.5 ^b	F٥	28.8	D
11	SR 55 SB: 17th St EB off-ramp	Diverge	90.1 ^b	F٥	31.5	D
12	SR 55 SB: 17th St on-ramp to 4th St off-ramp	Weave	95.4 ^b	F٥	39.1 ^b	ЕÞ
13	SR 55 SB: SB I-5 off-ramp	Diverge	65.8 ^b	F٥	41.6 ^b	ЕÞ
14	SR 55 SB: 4th St on-ramp	Merge	44.2 ^b	F٥	24.7	С

Table 2.5-3b: Existing Southbound SR 55 Freeway Operations

Notes: Ave: Avenue; EB: eastbound; LOS: level of service; SB: southbound; SR: State Route; St: Street; WB: westbound a Density is reported in vehicles per hour per lane.

b Bold font indicates unacceptable LOS E or F conditions.

Source: Fehr & Peers (July 2018), p. 32.

In the southbound direction, SR 55 experiences significant congestion during the AM peak hour due to heavy commute traffic, which results in LOS E or F conditions at all the study locations on southbound SR 55 from SR 91 to I-5. During the PM peak hour, most of study locations operate at LOS D or better with the exception of the Lincoln Avenue on-ramp, SR 22 off-ramp due to downstream congestion along westbound SR 22, the weaving segment between 17th Street on-ramp and 4th Street off-ramp, and the southbound I-5 off-ramp, which operate at LOS E or F conditions during the PM peak hour.

Intersection Operations

Table 2.5-4 shows the AM and PM peak hour delay and LOS for the study intersections. As shown, the majority of the study intersections operate at LOS D or better in the AM peak hour, except for the 17th Street/Tustin Street, 4th Street/Tustin Street, and the 4th Street/Yorba Street intersection operating at LOS F conditions. During the PM peak hour, heavier traffic demand along arterials causes more intersections to operate at deficient LOS E or F conditions, including the Tustin Street intersections near Lincoln Avenue, a few intersections along Meats Avenue and Katella Avenue, 17th Street intersections at Tustin Street and Ponderosa Street, and the 4th Street intersections at Tustin Street and Yorba Street due to the vehicle queue spillback from the 4th Street/SR 55 interchange.

No.	Intersection	Control	AM Delay ª	AM LOS	PM Delay ª	PM LOS
1	Tustin St/SR 55 SB off-ramp	Signal	15	В	145 °	F۵
2	Tustin St/Lincoln Ave	Signal	48	D	104 ^c	F۵
3	Tustin St/SR 55 SB on-ramp	Signal	17	В	72 °	Еc
4	Santiago Blvd/Lincoln Avenue	Signal	39	D	34	С
5	Santiago Blvd/SR 55 NB on-ramp	Signal	28	С	44	D
6	Meats Ave/Tustin St	Signal	35	С	86 ^c	F۵
7	Meats Ave/SR 55 SB ramps	Future Intersection	0	0	0	0
8	Meats Ave/SR 55 NB ramps	Future Intersection	0	0	0	0
9	Meats Ave/Santiago Blvd	Signal	37	D	64 ^c	Еc
10	Katella Ave/Tustin St	Signal	37	D	77 °	Е°
11	Katella Ave/SR 55 SB ramps	Signal	38	D	38	D
12	Katella Ave/SR 55 NB ramps	Signal	40	D	89 °	F۵
13	Katella Ave/Handy St	Signal	28	С	41	D
14	Chapman Ave/Tustin St	Signal	43	D	52	D
15	Chapman Ave/Wayfield St	Side Street Stop	16	В	23	С
16	Chapman Ave/SR 55 SB ramps	Signal	23	С	19	В
17	Chapman Ave/SR 55 NB ramps	Signal	28	С	12	В
18	Chapman Ave/Yorba St	Signal	40	D	27	С
19	17th St/Tustin St	Signal	97 °	F۵	62 °	Е°
20	17th St/ Ponderosa St	Side Street Stop	10	В	40 °	E۵
21	17th St/SR 55 SB ramps	Signal	51	D	22	С
22	17th St/SR 55 NB ramps	Signal	19	В	41	D
23	17th St/Yorba St/Carroll Way	Signal	47	D	53	D
24	4th St/Tustin St	Signal	103 °	F۵	56 °	Е°
25	4th St/SR 55 SB ramps	Signal	22	С	25	С
26	4th St/SR 55 NB ramps	Signal	28	С	34	С
27	4th St/Yorba St	Signal	88 ^c	F۵	182 °	F۵
28	First St/Tustin St	Signal	23	С	23	С
29	Tustin St/SR 22 WB on-ramp	Signal	24	С	15	В
30	17th St/Enderle Center Dr/Yorba St ^b	Signal	0.59	А	0.62	А
31	First St/Yorba St/Pacific St ^b	Signal	0.39	А	0.53	А

Table 2.5-4: Existing Intersection Operations

Notes: Ave: Avenue; Dr: Drive; EB: eastbound; LOS: level of service; NB: northbound; SB: southbound; SR: State Route; St: Street; WB: westbound

a Delay is reported for seconds per vehicle.

b Volume/capacity ratio is reported for the local intersections.

c Bold text indicates unacceptable level of service.

Source: Fehr & Peers (July 2018), p. 34.

Systemwide Performance

While LOS is a typical indicator of transportation facility performance, the systemwide performance metrics have become effective measurements in evaluating transportation system performance and have been applied in many transportation projects. The systemwide

performance measures used for this project include travel time, travel speeds, number of vehicles served by the study network, and vehicle-hours of delay (VHD).

Table 2.5-5 shows the AM and PM peak hour travel time and speeds for the SR 55 corridor. During the AM peak hour, northbound SR 55 traffic travel at free-flow speed at most of the study corridor. In the southbound direction, heavy congestion between I-5 and SR 22 results in an average speed of less than 20 mph. North of SR 22, the travel speed increases to approximately 30 mph through SR 91. The total travel time for southbound SR 55 is approximately 18 minutes with the average speed of 25 mph.

During the PM peak hour, significant congestion along the northbound SR 55 results in an average speed of approximately 30 mph through the study corridor from I-5 to SR 91. The total travel time for northbound SR 55 is approximately 15 minutes. The southbound traffic flows quite well with a free-flow speed at most locations except for some slowdown at the SR 22 off-ramp due to downstream congestion at the westbound SR 22, 17th Street on-ramp to 4th Street off-ramp, and the southbound I-5 off-ramp. The total travel time for southbound SR 55 is approximately seven minutes with the average speed of 63 mph.

Direction	Location	AM Peak Hour Travel Time (min:sec)	AM Peak Hour Speed	PM Peak Hour Travel Time (min:sec)	PM Peak Hour Speed
NB SR 55	I-5 to SR 22	2:20	64	5:00	31
NB SR 55	SR 22 to SR 91	4:20	64	9:50	29
NB SR 55	I-5 to SR 91 (Total)	6:40	64	14:50	29
SB SR 55	SR 91 to SR 22	9:50	29	4:30	64
SB SR 55	SR 22 to I-5	8:00	19	2:30	62
SB SR 55	SR 91 to I-5 (Total)	17:50	25	7:00	63

Table 2.5-5: Existing SR 55 Corridor Peak Hour Travel Time

Notes: I-: Interstate; min: minutes; NB: northbound; SB: southbound; sec: seconds; SR: State Route Source: Fehr & Peers (July 2018), p. 35.

In addition, other systemwide traffic metrics (number of vehicles served by the network, VHD, and average delay per vehicle) were reported for both the AM and PM peak periods and are shown in Table 2.5-6. The results reflect the higher observed level of congestion in the AM peak period, which translates to fewer people getting through the corridor and higher average vehicle delay. The average delay is approximately 2.5 minutes during the AM peak period and slightly above two minutes for PM travelers.

Table 2.5-6: Existing SR 55 Systemwide Traffic Metrics

Traffic Metrics	AM Peak Period	PM Peak Period
Number of Vehicles Served	193,540	240,100
VHD (vehicle hours of delay)	8,330	8,520
Delay per Vehicle (sec/veh)	150	130

Notes: sec/veh: seconds per vehicle

Source: Fehr & Peers (July 2018), p. 36.

2.5.3 Environmental Consequences

2.5.3.1 Temporary Impacts

No Build Alternative

Under this alternative, no reconstruction or improvements would be made to the existing SR 55 corridor. As a result, the No Build Alternative would not result in temporary impacts related to traffic and circulation.

Build Alternative (Preferred Alternative)

The construction of the Build Alternative would result in temporary impacts to traffic circulation and pedestrian and bicycle access on and in the vicinity of the project segment of SR 55. Those impacts could include short-term closures of freeway and arterial facilities and modifications to the existing facilities as described below.

It is anticipated that no reductions in the number of mainline traveled lanes will occur during peak-hour period. Standard lane widths of 12 feet will remain on a majority of the mainline; however, a minimum lane width of 11 feet will occur in tight locations on the mainline and ramps. Local overnight ramp closures would be required to make improvements on the ramps and overhead signage installation. Temporary lane closures are required to stage construction when installing k-rail, when lanes are being restriped, and when the freeway is being restored to its completed condition. Temporary overnight full roadway closure on Lincoln Avenue will be required for bridge falsework (installation and removal) and construction. Temporary full freeway closure will be needed for overhead sign construction at various locations on SR 55. These temporary closures will be limited to off-peak hours, and adequate notification would be provided to the public and emergency service providers.

Conceptual stage construction for this project has identified the need for two stages. In the first stage, the existing mainline lanes will be shifted and restriped toward the median, and traffic will move to the temporary lanes. On- and off-ramps will also be restriped, and traffic will be shifted to the temporary lanes. Stage 1 will begin constructing portions of the mainline freeway, ramp, and retaining walls. northbound and southbound 4th Street off-ramp termini improvements, southbound Katella Avenue interchange, and bridge construction at Lincoln Avenue will be completed at this stage. In Stage 1A, additional gore improvements will be constructed. In the Stage 2, portions of the temporary mainline lanes will be maintained to complete the remaining improvements. The temporary northbound and southbound mainline striping between 4th Street and 17th Street will be shifted to the outside to construct the median. The remaining ramp, gore, and retaining wall improvements will also be completed at this stages, temporary railing (Type K) will be provided as protection from traffic, and the work area and will be relocated as necessary.

Preliminary conceptual Stage Construction Plans are provided in the Draft Project Report (August 2019).

The total duration of construction activities is anticipated to last for approximately 24 months. Temporary closures of the SR 55 mainline, interchange ramps, and local arterials would be limited to overnight (between 10:00 p.m. and 5:00 a.m.) with limited durations.

These temporary modifications would allow for traffic to pass through the project area on SR 55, the ramps, and the arterials; but those travelers would be expected to experience some delays as they travel on those facilities.

The following Project Features have been identified to minimize impacts to during construction.

PF-T-1 Transportation Management Plan. A Transportation Management Plan (TMP) will be developed during final design and will be implemented by the construction contractor during project construction to address short-term traffic circulation and access effects during project construction. Specifically, during final design, a qualified traffic engineer will prepare the TMP, which will include, but not be limited to, the elements described below to reduce traveler delays and enhance traveler safety during project construction. The TMP will be approved by OCTA and Caltrans District 12 during final design and will be incorporated into the plans, specifications, and estimates.

The purpose of the TMP is to address the short-term traffic and transportation impacts during construction of the project. The objectives of the TMP are to:

- Maintain traffic safety during construction
- Effectively maintain an acceptable level of traffic flow throughout the transportation system during construction
- Minimize traffic delays and facilitate reduction of the overall duration of construction activities
- Minimize detours and impacts to pedestrians and bicyclists
- Foster public awareness of the project and related transportation and traffic impacts
- Achieve public acceptance of construction of the project and the TMP measures

The TMP will contain, but not be limited to, the following elements intended to reduce traveler delay and enhance traveler safety. These elements will be refined during final design and incorporated in the TMP for implementation during project construction.

- **Public Information/Public Awareness Campaign (PAC)**. The primary goal of the PAC is to educate motorists, business owners and operators, residents, elected officials, and government agencies about project construction activities and associated transportation impacts. The PAC is an important tool for reaching target audiences with important construction project information and is anticipated to include, but not be limited to:
 - Rideshare information
 - Brochures and mailers
 - o Media releases
 - o Paid advertising

- o Public meetings
- o Broadcast fax and email services
- o Telephone hotline
- Notification to targeted groups
- Commercial traffic reporters/feeds
- o Project website
- o Visual information
- o Local cable television and news
- o Internet postings
- **Traveler Information Strategies**. The effective implementation of a traveler information system during construction is crucial for enabling motorists to make informed decisions about their travel plans and options with real-time traffic information. That real-time traffic information will include information on mainline, ramp, lane, and arterial closures and detours; travel delays; access to adjacent land uses; "businesses are open" signing; and other signing and information to assist travelers in navigating through, around, and in construction areas. Key components of the traveler information system are anticipated to include, but not be limited to:
 - Fixed and portable changeable message signs
 - o Ground-mounted signs
 - o Automated work zone information systems
 - Highway advisory radio
 - o Lane closure website
 - o Caltrans highway information network
 - o Bicycle and pedestrian information
 - o Commute Smart website
- **Incident Management**. Effective incident management will ensure that incidents in and near construction areas are cleared quickly and do not result in substantial delays for the traveling public in the vicinity of work zones. Incident management includes, but is not limited to:
 - o Caltrans Construction Zone Enhanced Enforcement Program (COZEEP)
 - o Freeway Service Patrol
 - Traffic surveillance stations
 - o Caltrans Transportation Management Center
 - o Traffic management team
 - o Towing services
- **Construction Strategies**. The TMP will include procedures to lessen the transportation effects of project-related construction activities and will include, but not be limited to, consideration of the following:
 - o Conflicts with other projects and special events
 - Construction staging alternatives
 - o Mainline lane closures
 - o Local road closures

- Ramp and connector closures (no two consecutive on- or off-ramps in the same direction would be closed at the same time)
- o Pedestrian and bicycle detours and facility closures
- Traffic control improvements
- o Coordination with other projects
- Project phasing
- o Traffic screens
- o Truck traffic restrictions
- **Demand Management**. Temporarily reducing the overall traffic volumes on the project segment of SR 55 could reduce the short-term adverse effects of construction on traffic operations. The TMP will include, but not be limited to, the following strategies that could reduce vehicular demand in the study area during project construction:
 - o Rideshare incentives
 - o Transit services
 - o Shuttle services
 - o Variable work hours and telecommuting
 - o Park-and-ride lots
- Alternate Route Strategies. The TMP will provide strategies for notifying motorists, pedestrians, and bicyclists of planned construction activities. This notification will allow travelers to make informed decisions about their travel plans, including the consideration of possible alternate routes. The TMP will finalize the detour and alternate routes for motorists, specifically addressing the following:
 - o Mainline lane closures
 - Ramp/connector closures
 - Local road closures
 - Temporary highway or shoulder use
 - o Local street improvements
 - o Temporary detours and closures of bicycle and pedestrian facilities
 - Traffic signal coordination

The design/build contractor will implement the measures in the TMP during construction.

PF-T-2 Prior to and during construction, the construction contractor will coordinate with OCTA Central Communications regarding all temporary mainline ramp and arterial closures and detour plans that would affect OCTA bus routes to minimize temporary delays to OCTA bus service.

2.5.3.2 Permanent Impacts

As noted above, the following future year scenarios are considered in the traffic analysis:

- 1. Opening Year (2035) No Build Alternative
- 2. Opening Year (2035) Build Alternative

- 3. Design Year (2055) No Build Alternative)
- 4. Design Year (2055) Build Alternative

Figure 2.5-4 displays the Opening Year 2035 freeway traffic forecasts under the No Build Alternative. Figure 2.5-5a and Figure 2.5-5b show the Opening Year 2035 intersection traffic forecasts under the No Build Alternative. The Opening Year 2035 freeway and intersection traffic forecasts under the Build Alternative are shown in Figure 2.5-6, Figure 2.5-7a, and Figure 2.5-7b, respectively.

Under the Design Year 2055, the freeway and intersection traffic forecasts for the No Build Alternative are displayed in Figure 2.5-8, Figure 2.5-9a, and Figure 2.5-9b. The freeway and intersection traffic forecasts under the Build Alternative are shown in Figure 2.5-10, Figure 2.5-11a, and Figure 2.5-11b.

No Build Alternative

Under this alternative for Opening Year 2035, no improvements would be made to the existing SR 55 corridor other than routine roadway maintenance. Under Design Year 2055, the SR 55/Meats Avenue interchange was assumed to be in place.

Opening Year 2035 Conditions

The Opening Year 2035 operations analysis results for the No Build Alternative are summarized in Table 2.5-7a (northbound SR 55 AM), Table 2.5-7b (northbound SR 55 PM), Table 2.5-7c (southbound SR 55 AM), Table 2.5-7d (southbound SR 55 PM), Table 2.5-8a (intersection AM), Table 2.5-8b (intersection AM), Table 2.5-9a (travel time AM), Table 2.5-9b (travel time PM), and Table 2.5-10 (systemwide traffic metrics).

Freeway Operations: During the AM peak hour, southbound SR 55 would experience heavy congestion with deficient LOS E or F conditions from SR 91 to Katella Avenue. Most of the study locations on northbound SR 55 south of Katella Avenue off-ramp would operate at LOS D or better during the AM peak hour. North of Katella Avenue to SR 91, a majority of the northbound SR 55 study locations would operate at LOS E or F conditions due to higher demand along the corridor by 2035. During the PM peak hour, all the study locations on northbound SR 55 would experience noticeable congestion and operate at LOS F conditions. Southbound SR 55 from Chapman Avenue to I-5 would also experience moderate congestion with LOS E or F conditions at several study locations.

Intersection Operations: Most of the study intersections would operate at LOS D or better during the AM peak hour. Under the PM peak hour, 14 out of the 31 study intersections would experience noticeable traffic congestion and operate at LOS E or F conditions.

SR 55 Corridor Travel Time: During the AM peak hour, the northbound vehicles would travel at approximately 60 mph between I-5 and SR 22 and then expect moderate slowdown to 51 mph between SR 22 and SR 91. In the southbound direction, substantial congestion along southbound SR 55 under the No Build Alternative would result in an average speed of 30 mph between SR 91 and SR 22 and less than 30 mph between SR 22 and I-5. During the PM peak hour, significant congestion along the northbound SR 55 would result in an average speed of 26 mph

through the study corridor, while the southbound SR 55 traffic would flow much better, with a speed of 60 mph from SR 91 to SR 22 and approximately 55 mph from SR 22 to I-5.

Systemwide Traffic Metrics: Increasing congestion along the SR 55 corridor by 2035 would result in higher vehicle delay under the No Build Alternative under both AM and PM peak periods.



Figure 2.5-4. Peak Hour and Daily Traffic Volumes – Opening Year (2035) No Build



Figure 2.5-5a. Peak Hour Intersection Volumes – Opening Year (2035) No Build Conditions



Figure 2.5-5b. Peak Hour Intersection Volumes – Opening Year (2035) No Build Conditions



Figure 2.5-6. Peak Hour and Daily Traffic Volumes – Opening Year (2035) Build

Source: Fehr & Peers 2018



Figure 2.5-7a. Peak Hour Intersection Volumes – Opening Year (2035) Build Conditions



Figure 2.5-7A Peak Hour Intersection Volumes Opening Year (2035) Build Conditions



Figure 2.5-7b. Peak Hour Intersection Volumes – Opening Year (2035) Build Conditions



Figure 2.5-8. Peak Hour and Daily Traffic Volumes- Design Year (2055) No Build

Source: Fehr & Peers 2018



Figure 2.5-9a. Peak Hour Intersection Volumes – Design Year (2055) No Build Conditions



Figure 2.5-9A Peak Hour Intersection Volumes Design Year (2055) No Build Conditions



Figure 2.5-9b. Peak Hour Intersection Volumes – Design Year (2055) No Build Conditions



Figure 2.5-10. Peak Hour and Daily Traffic Volumes– Design Year (2055) Build Conditions

Source: Fehr & Peers 2018



Figure 2.5-11a. Peak Hour Intersection Volumes – Design Year (2055) Build Conditions



Figure 2.5-11A Peak Hour Intersection Volumes Design Year (2055) Build Conditions



Figure 2.5-11b. Peak Hour Intersection Volumes – Design Year (2055) Build Conditions
Table 2.5-7a: Opening Year 2035 Northbound	SR 55 Freeway Operations AM Peak Hour
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No.	Location	Туре	No Build Alternative Density ^a	No Build Alternative LOS	Build Alternative Density ^a	Build Alternative LOS
1	SR 55 NB: Irvine Blvd off-ramp	Diverge	56 ^b	F٥	47 ^b	F ^b
2	SR 55 NB: NB I-5 on-ramp	Merge	68 ^b	F٥	23	С
3	SR 55 NB: Irvine Blvd on-ramp to 17th St off-ramp	Weave	33	D	24	С
4	SR 55 NB: 17th St EB on-ramp	Merge	60 ^b	F٥	42 ^b	Ep
5	5 SR 55 NB: 17th St WB on-ramp to SR 22 off-ramp		28	С	21	С
6	SR 55 NB: Chapman Ave Bypass off-ramp	Diverge	31	D	29	D
7	7 SR 55 NB: SR 22 on-ramp to Chapman Ave off-ramp		23	С	25	С
8	SR 55 NB: Chapman Ave WB off-ramp	Diverge	25	С	25	С
9	SR 55 NB: Chapman Ave on-ramp	Merge	24	С	23	С
10	SR 55 NB: Chapman Ave on-ramp to Katella Ave off-ramp	Basic	27	С	23	С
11	SR 55 NB: Katella Ave off-ramp	Diverge	49 ^b	F٥	32	D
12	SR 55 NB: Katella Ave EB on-ramp	Merge	85 ^b	F٥	80 ^b	F٥
13	SR 55 NB: Katella Ave WB on-ramp	Merge	77 ^b	F٥	79 ^b	F٥
14	SR 55 NB: Katella Ave WB on-ramp to Lincoln Ave off-ramp	Basic	55 ^b	F٥	51 ^b	F٥
15	SR 55 NB: Lincoln Ave off-ramp	Diverge	54 ^b	F٥	55 ^b	F ^b
16	SR 55 NB: Lane Drop to Lincoln Ave on- ramp	Basic	34	D	35	D
17	SR 55 NB: Lincoln Ave on-ramp to SR 91 off-ramp	Weave	27	С	26	С

Notes: Ave: Avenue; Blvd: Boulevard; Dr: Drive; EB: eastbound; LOS: level of service; NB: northbound; SR: State Route; St: Street; WB: westbound

a Density is reported in vehicles per hour per lane.

b **Bold** font indicates unacceptable LOS E or F conditions.

Source: Fehr & Peers (July 2018), p. 58.

Table 2.5 7b: Opening Year 2035 Northbound SR 55 Freeway Operations PM Peak Hour

No.	Location	Туре	No Build Alternative Density ^a	No Build Alternative LOS	Build Alternative Density ^a	Build Alternative LOS
1	SR 55 NB: Irvine Blvd off-ramp	Diverge	91 ^b	F٥	90 ^b	F۵
2	SR 55 NB: NB I-5 on-ramp	Merge	119 ^b	F٥	118 ^b	F۵
3	SR 55 NB: Irvine Blvd on-ramp to 17th St off-ramp	Weave	89 ^b	F٥	88 ^b	F۵
4	SR 55 NB: 17th St EB on-ramp	Merge	107 ^b	F٥	102 ^b	F۵
5	SR 55 NB: 17th St WB on-ramp to SR 22 off-ramp	Weave	76 ^b	F٥	72 ^b	F۵
6	SR 55 NB: Chapman Ave Bypass off- ramp	Diverge	74 ^b	F٥	100 ^ь	F۵
7	SR 55 NB: SR 22 on-ramp to Chapman Ave off-ramp	Weave	89 ^b	Fb	103 ^b	F٥

No.	Location	Туре	No Build Alternative Density ^a	No Build Alternative LOS	Build Alternative Density ^a	Build Alternative LOS
8	SR 55 NB: Chapman Ave WB off-ramp	Diverge	82 ^b	F٥	85 ^b	F۵
9	SR 55 NB: Chapman Ave on-ramp	Merge	102 ^b	F۵	102 ^b	F۵
10	SR 55 NB: Chapman Ave on-ramp to Katella Ave off-ramp	Basic	89 ^b	F٥	88 ^b	F۵
11	SR 55 NB: Katella Ave off-ramp	Diverge	87 ^b	F۵	86 b	F۵
12	SR 55 NB: Katella Ave EB on-ramp	Merge	118 ^b	F٥	116 ^b	F٥
13	SR 55 NB: Katella Ave WB on-ramp	Merge	111 ^b	F۵	112 ^b	F۵
14	SR 55 NB: Katella Ave WB on-ramp to Lincoln Ave off-ramp	Basic	72 ^b	F♭	89 ^b	F♭
15	SR 55 NB: Lincoln Ave off-ramp	Diverge	83 ^b	F٥	81 ^b	F٥
16	SR 55 NB: Lane Drop to Lincoln Ave on- ramp	Basic	75 ^b	F ^b	82 ^b	F۵
17	SR 55 NB: Lincoln Ave on-ramp to SR 91 off-ramp	Weave	82 ^b	F♭	83 ^b	F♭

Notes: Ave: Avenue; Blvd: Boulevard; EB: eastbound; LOS: level of service; SB: southbound; SR: State Route; St: Street; WB: westbound

a Density is reported in vehicles per hour per lane.

b **Bold** font indicates unacceptable LOS E or F conditions.

Source: Fehr & Peers (July 2018), p. 58.

Table 2.5-7c: Opening Year 2035 Southbound SR 55 Freeway Operations AM Peak Hour

No.	Location	Туре	No Build Alternative Density ^a	No Build Alternative LOS	Build Alternative Density ^a	Build Alternative LOS
1	SR 55 SB: SR 91 on-ramp to Lincoln Ave off-ramp	Weave	67 ^b	F٥	63 ^b	F٥
2	SR 55 SB: Lincoln Ave on-ramp	Merge	55 ^b	F٥	33	D
3	SR 55 SB: Lincoln Ave on-ramp to Katella Ave off-ramp	Basic	48 ^b	F٥	28	С
4	SR 55 SB: Katella Ave off-ramp	Diverge	60 ^b	F٥	25	С
5	SR 55 SB: Katella Ave on-ramp to Chapman Ave off-ramp	Weave	86 ^b	F٥	24	С
6	SR 55 SB: Chapman Ave WB on-ramp	Merge	32	D	26	С
7	SR 55 SB: Chapman Ave EB on-ramp	Merge	54 ^b	F٥	52 ^b	F۵
8	SR 55 SB: SR 22 off-ramp	Diverge	35 ^b	Еb	38 ^b	Еb
9	SR 55 SB: SR 22 on-ramp	Merge	120 ^b	F٥	128 ^b	F۵
10	SR 55 SB: 17th St WB off-ramp	Diverge	102 ^b	F٥	130 ^b	F۵
11	SR 55 SB: 17th St EB off-ramp	Diverge	86 ^b	F٥	93 ^b	F۵
12	SR 55 SB: 17th St on-ramp to 4th St off-ramp	Weave	79 ^b	F ^b	72 ^b	F٥
13	SR 55 SB: SB I-5 off-ramp	Diverge	58 ^b	F٥	56 ^b	F٥
14	SR 55 SB: 4th St on-ramp	Merge	21	С	27	С

Notes: Ave: Avenue; EB: eastbound; LOS: level of service; SB: southbound; SR: State Route; St: Street; WB: westbound

a Density is reported in vehicles per hour per lane.

b **Bold** font indicates unacceptable LOS E or F conditions.

Source: Fehr & Peers (July 2018), p. 59.

Table 2.5-7d: Opening Year 2035 Southbound SR 55 Freeway Operations PM Peak Hour
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No.	Location	Туре	No Build Alternative Density ^a	No Build Alternative LOS	Build Alternative Density ^a	Build Alternative LOS
1	SR 55 SB: SR 91 on-ramp to Lincoln Ave off-ramp	Weave	29	D	28	D
2	SR 55 SB: Lincoln Ave on-ramp	Merge	45 ^b	F٥	51 ^b	F٥
3	SR 55 SB: Lincoln Ave on-ramp to Katella Ave off-ramp	Basic	28	С	28	С
4	SR 55 SB: Katella Ave off-ramp	Diverge	27	С	27	С
5	SR 55 SB: Katella Ave on-ramp to Chapman Ave off-ramp	Weave	31	D	29	С
6	SR 55 SB: Chapman Ave WB on- ramp	Merge	37 ^b	ЕÞ	27	С
7	SR 55 SB: Chapman Ave EB on- ramp	Merge	43 ^b	ЕÞ	33	D
8	SR 55 SB: SR 22 off-ramp	Diverge	47 ^b	F٥	49 ^b	F٥
9	SR 55 SB: SR 22 on-ramp	Merge	33	D	24	С
10	SR 55 SB: 17th St WB off-ramp	Diverge	33	D	24	С
11	SR 55 SB: 17th St EB off-ramp	Diverge	35	D	25	С
12	SR 55 SB: 17th St on-ramp to 4th St off-ramp	Weave	45 ^b	F٥	26	С
13	SR 55 SB: SB I-5 off-ramp	Diverge	45 ^b	F٥	31	D
14	SR 55 SB: 4th St on-ramp	Merge	26	С	30	D

Notes: Ave: Avenue; EB: eastbound; LOS: level of service; NB: northbound; SB: southbound; SR: State Route; St: Street; WB: westbound

a Density is reported in vehicles per hour per lane.

b **Bold** font indicates unacceptable LOS E or F conditions.

Source: Fehr & Peers (July 2018), p. 59.

Table 2.5-8a: Opening Year 2035 Intersection	Operations AM Peak Hour
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No.	Intersection	Control	No Build Alternative Delay ^a	No Build Alternative LOS	Build Alternative Delay ^a	Build Alternative LOS
1	Tustin St/SR 55 SB off-ramp	Signal	21	С	NA	NA
2	Tustin St/Lincoln Ave	Signal	119°	F۵	52	D
3	Tustin St/SR 55 SB on-ramp	Signal	18	В	30	С
4	Santiago Blvd/Lincoln Avenue	Signal	45	D	45	D
5	Santiago Blvd/SR 55 NB on-ramp	Signal	3-	С	27	С
6	Meats Ave/Tustin St	Signal	33	С	37	D
7	Meats Ave/SR 55 SB ramps	Future Intersection	NA	NA	NA	NA
8	Meats Ave/SR 55 NB ramps	Future Intersection	NA	NA	NA	NA
9	Meats Ave/Santiago Blvd	Signal	40	D	41	D
10	Katella Ave/Tustin St	Signal	43	D	54	D
11	Katella Ave/SR 55 SB ramps	Signal	34	С	29	С
12	Katella Ave/SR 55 NB ramps	Signal	28	D	31	С
13	Katella Ave/Handy St	Signal	21	С	21	С
14	Chapman Ave/Tustin St	Signal	40	D	42	D
15	Chapman Ave/Wayfield St	Side Street Stop	26	D	32	D
16	Chapman Ave/SR 55 SB ramps	Signal	16	В	13	В
17	Chapman Ave/SR 55 NB ramps	Signal	23	С	22	С
18	Chapman Ave/Yorba St	Signal	42	D	38	D
19	17th St/Tustin St	Signal	87 °	F۵	87 °	F۵
20	17th St/ Ponderosa St	Side Street Stop	11	В	18	С
21	17th St/SR 55 SB ramps	Signal	32	С	40	D
22	17th St/SR 55 NB ramps	Signal	23	С	20	С
23	17th St/Yorba St/Carroll Way	Signal	46	D	45	D
24	4th St/Tustin St	Signal	157 °	F۵	154 °	F۵
25	4th St/SR 55 SB ramps	Signal	19	В	23	С
26	4th St/SR 55 NB ramps	Signal	34	С	27	С
27	4th St/Yorba St	Signal	89 °	F۵	83 °	F۵
28	First St/Tustin St	Signal	21	С	26	С
29	Tustin St/SR 22 WB on-ramp	Signal	26	С	25	С
30	17th St/Enderle Center Dr/Yorba St ^b	Signal	0.64	А	0.62	А
31	First St/Yorba St/Pacific St ^b	Signal	0.45	А	0.47	А

Notes: Ave: Avenue; Blvd: Boulevard; Dr: Drive; EB: eastbound; LOS: level of service; NB: northbound; SB: southbound; SR: State Route; St: Street; WB: westbound; NA: not applicable

a Delay is reported for seconds per vehicle.

b Volume/capacity ratio is reported for the local intersections.

c Bold text indicates unacceptable level of service.

Source: Fehr & Peers (July 2018), p. 61, and Fehr & Peers (August 2019), p. 4.

Table 2.5-8b: Opening Year 2035 Intersection Operations PM Peak Hour

No.	Intersection	Control	No Build Alternative Delay ^a	No Build Alternative LOS	Build Alternative Delay ^a	Build Alternative LOS
1	Tustin St/SR 55 SB off-ramp	Signal	63 °	E۵	NA	NA
2	Tustin St/Lincoln Ave	Signal	128 °	F۵	96 °	F۵
3	Tustin St/SR 55 SB on-ramp	Signal	77 °	Е°	74 °	Еc
4	Santiago Blvd/Lincoln Ave	Signal	40	D	36	D
5	Santiago Blvd/SR 55 NB on-ramp	Signal	127 °	F۵	48	D
6	Meats Ave/Tustin St	Signal	85 °	F۵	82 °	F۵
7	Meats Ave/SR 55 SB ramps	Future Intersection	NA	NA	NA	NA
8	Meats Ave/SR 55 NB ramps	Future Intersection	NA	NA	NA	NA
9	Meats Ave/Santiago Blvd	Signal	68 °	Е°	66 ^c	Еc
10	Katella Ave/Tustin St	Signal	123 °	F۵	120 °	F۵
11	Katella Ave/SR 55 SB ramps	Signal	38	D	49	D
12	Katella Ave/SR 55 NB ramps	Signal	109 °	F۵	38	D
13	Katella Ave/Handy St	Signal	83 °	F۵	16	В
14	Chapman Ave/Tustin St	Signal	75 °	E۵	71 °	E۵
15	Chapman Ave/Wayfield St	Side Street Stop	245 °	F۵	210 °	F۵
16	Chapman Ave/SR 55 SB ramps	Signal	40	D	33	С
17	Chapman Ave/SR 55 NB ramps	Signal	24	С	28	С
18	Chapman Ave/Yorba St	Signal	34	С	33	С
19	17th St/Tustin St	Signal	89 °	F۵	63 °	Еc
20	17th St/ Ponderosa St	Side Street Stop	31	D	22	С
21	17th St/SR 55 SB ramps	Signal	15	В	41	D
22	17th St/SR 55 NB ramps	Signal	33	С	50	D
23	17th St/Yorba St/Carroll Way	Signal	41	D	42	D
24	4th St/Tustin St	Signal	80 °	F۵	78 °	Е°
25	4th St/SR 55 SB ramps	Signal	26	С	25	С
26	4th St/SR 55 NB ramps	Signal	36	D	38	D
27	4th St/Yorba St	Signal	210 °	F۵	202 °	F۵
28	First St/Tustin St	Signal	24	С	23	С
29	Tustin St/SR 22 WB on-ramp	Signal	15	В	15	В
30	17th St/Enderle Center Dr/Yorba St ^b	Signal	0.62	А	0.62	А
31	First St/Yorba St/Pacific St ^b	Signal	0.59	А	0.59	А

Notes: Ave: Avenue; Blvd: Boulevard; Dr: Drive; EB: eastbound; LOS: level of service; NB: northbound; SB: southbound; SR: State Route; St: Street; WB: westbound.

a Delay is reported for seconds per vehicle.

b Volume/capacity ratio is reported for the local intersections.

c Bold text indicates unacceptable level of service.

Source: Fehr & Peers (July 2018), p. 62, and Fehr & Peers (August 2019), p.4.

Table 2.5-9a: Opening Year 2035 SR 55 Corridor Peak Hour Travel Time AM Peak Hour

Direction	Location	No Build Alternative Travel Time (min:sec)	No Build Alternative Speed	Build Alternative Travel Time (min:sec)	Build Alternative Speed
NB SR 55	I-5 to SR 22	2:40	60	2:20	65
NB SR 55	SR 22 to SR 91	5:40	51	5:40	51
NB SR 55	I-5 to SR 91 (Total)	8:20	54	8:00	56
SB SR 55	SR 91 to SR 22	9:40	30	5:50	49
SB SR 55	SR 22 to I-5	5:10	29	5:40	27
SB SR 55	SR 91 to I-5 (Total)	14:50	30	11:30	39

Notes: I-: Interstate; min: minutes; NB: northbound; SB: southbound; sec: seconds; SR: State Route Source: Fehr & Peers (July 2018), p. 63.

Table 2.5-9b: Opening Year 2035 SR 55 Corridor Peak Hour Travel Time PM Peak Hour

Direction	Location	No Build Alternative Travel Time (min:sec)	No Build Alternative Speed	Build Alternative Travel Time (min:sec)	Build Alternative Speed
NB SR 55	I-5 to SR 22	5:10	30	4:30	34
NB SR 55	SR 22 to SR 91	12:00	24	12:30	23
NB SR 55	I-5 to SR 91 (Total)	17:10	26	17:00	26
SB SR 55	SR 91 to SR 22	4:50	60	4:30	63
SB SR 55	SR 22 to I-5	2:50	54	2:20	64
SB SR 55	SR 91 to I-5 (Total)	7:40	57	6:50	63

Notes: I-: Interstate; min: minutes; NB: northbound; SB: southbound; sec: seconds; SR: State Route Source: Fehr & Peers (July 2018), p. 63.

Table 2.5-10: Opening Year 2035 SR 55 Systemwide Traffic Metrics

Traffic Metrics	AM Peak Period No Build Alternative	AM Peak Period Build Alternative	PM Peak Period No Build Alternative	PM Peak Period Build Alternative
Number of Vehicles Served	211,310	213,060	250,930	252,410
VHD (vehicle hours of delay)	9,930	8,040	13,110	12,290
Delay per Vehicle (sec/veh)	170	135	185	170

Source: Fehr & Peers (July 2018), p. 65.

Design Year 2055 Conditions

The Design Year 2055 operations analysis results for the No Build Alternative are summarized in Table 2.5-11Table 2.5-11a (northbound SR 55 AM), Table 2.5-11b (northbound SR 55 PM), Table 2.5-11c (southbound SR 55 AM), Table 2.5-11d (southbound SR 55 PM), Table 2.5-12a (intersection AM), Table 2.5-12b (intersection AM), Table 2.5-13a (travel time AM), Table 2.5-13b (travel time PM), and Table 2.5-14 (systemwide traffic metrics).

Freeway Operations: During the AM peak hour, southbound SR 55 would experience heavy congestion with deficient LOS E or F conditions at majority of locations. Most of the study locations on northbound SR 55 would operate at LOS E or F during the AM peak hour due to increased traffic demand by 2055. During the PM peak hour, all the study locations on northbound SR 55 would experience noticeable congestion and operate at LOS F conditions. Southbound SR 55 from Chapman Avenue to I-5 would also experience moderate congestion with LOS E or F conditions at several study locations.

Intersection Operations: Twelve out of 31 study intersections would operate at LOS E or F during the AM peak hour. Under the PM peak hour, 15 out of the 31 study intersections would experience noticeable traffic congestion and operate at LOS E or F conditions.

SR 55 Corridor Travel Time: During the AM peak hour, the northbound vehicles would travel at approximately 50 mph between I-5 and SR 22 and then expect moderate slowdown to 30 mph between SR 22 and SR 91. In the southbound direction, substantial congestion along southbound SR 55 under the No Build Alternative would result in an average speed of 27 mph between SR 91 and SR 22 and 24 mph between SR 22 and I-5. During the PM peak hour, significant congestion along the northbound SR 55 would result in an average speed of approximately 25 mph through the study corridor, while the southbound SR 55 traffic would flow much better with a speed of 57 mph from SR 91 to SR 22 and 51 mph from SR 22 to I-5.

Systemwide Traffic Metrics: Increasing congestion along the SR 55 corridor by 2055 would result in higher vehicle delay under the No Build Alternative under both AM and PM peak periods.

Table 2.5-11a: Design	n Year 2055 Northboun	d SR 55 Freeway	Operations AM Peak Hour
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No.	Location	Туре	No Build Alternative Density ^a	No Build Alternative LOS	Build Alternative Density ^a	Build Alternative LOS
1	SR 55 NB: Irvine Blvd off-ramp	Diverge	51 ^b	F۵	45 ^b	F٥
2	SR 55 NB: NB I-5 on-ramp	Merge	52 ^b	F٥	25	С
3	SR 55 NB: Irvine Blvd on-ramp to 17th St off-ramp	Weave	33	D	27	С
4	SR 55 NB: 17th St EB on-ramp	Merge	45 ^b	F٥	45 ^b	F۵
5	SR 55 NB: 17th St WB on-ramp to SR 22 off-ramp	Weave	31	D	21	С
6	SR 55 NB: Chapman Ave Bypass off- ramp	Diverge	55 ^b	ЕÞ	28	D
7	SR 55 NB: SR 22 on-ramp to Chapman Ave off-ramp	Weave	69 ^b	F٥	37 ^b	Е ^ь
8	SR 55 NB: Chapman Ave WB off-ramp	Diverge	85 ^b	F٥	51 ^b	F٥
9	SR 55 NB: Chapman Ave on-ramp	Merge	107 ^b	F٥	82 ^b	F٥
10	SR 55 NB: Chapman Ave on-ramp to Katella Ave off-ramp	Basic	98 ^b	F٥	94 ^b	F ^b
11	SR 55 NB: Katella Ave off-ramp	Diverge	87 ^b	F٥	89 ^b	F٥
12	SR 55 NB: Katella Ave EB on-ramp	Merge	102 ^b	F٥	102 ^b	F٥
13	SR 55 NB: Katella Ave WB on-ramp	Merge	84 ^b	F٥	87 ^b	F۵
14	SR 55 NB: Katella Ave WB on-ramp to Lincoln Ave off-ramp	Basic	56 ^b	F٥	80 ^b	F ^b
15	SR 55 NB: Lincoln Ave off-ramp	Diverge	64 ^b	F٥	64 ^b	F٥
16	SR 55 NB: Lane Drop to Lincoln Ave on- ramp	Basic	40 ^b	ЕÞ	36 ^b	ЕÞ
17	SR 55 NB: Lincoln Ave on-ramp to SR 91 off-ramp	Weave	36 ^b	Eb	30	D

Notes: Ave: Avenue; Blvd: Boulevard; EB: eastbound; LOS: level of service; NB: northbound; SR: State Route; St: Street; WB: westbound

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Density is reported in vehicles per hour per lane. Bold font indicates unacceptable LOS E or F conditions. b

Source: Fehr & Peers (July 2018), p. 75.

No.	Location	Туре	No Build Alternative Density ^a	No Build Alternative LOS	Build Alternative Density ^a	Build Alternative LOS
1	SR 55 SB: SR 91 on-ramp to Lincoln Ave off-ramp	Weave	91 ^b	F٥	91 ^b	F٥
2	SR 55 SB: Lincoln Ave on-ramp	Merge	123 ^b	F٥	125 ^b	F٥
3	SR 55 SB: Lincoln Ave on-ramp to Katella Ave off-ramp	Basic	92 ^b	F ^b	93 ^b	F ^b
4	SR 55 SB: Katella Ave off-ramp	Diverge	104 ^b	F٥	100 ^b	F٥
5	SR 55 SB: Katella Ave on-ramp to Chapman Ave off-ramp	Weave	74 ^b	F ^b	85 ^b	F ^b
6	SR 55 SB: Chapman Ave WB on-ramp	Merge	83 ^b	F٥	109 ^b	F٥
7	SR 55 SB: Chapman Ave EB on-ramp	Merge	107 ^b	F٥	110 ^b	F٥
8	SR 55 SB: SR 22 off-ramp	Diverge	97 ^b	F٥	87 ^b	F٥
9	SR 55 SB: SR 22 on-ramp	Merge	110 ^b	F٥	103 ^b	F٥
10	SR 55 SB: 17th St WB off-ramp	Diverge	95 ^b	F٥	96 ^b	F٥
11	SR 55 SB: 17th St EB off-ramp	Diverge	92 ^b	F٥	87 ^b	F٥
12	SR 55 SB: 17th St on-ramp to 4th St off-ramp	Weave	135 ^b	F ^b	126 ^b	F ^b
13	SR 55 SB: SB I-5 off-ramp	Diverge	116 ^b	F ^b	113 ^b	F ^b
14	SR 55 SB: 4th St on-ramp	Merge	105 ^b	F ^b	77 ^b	F ^b

Notes: Ave: Avenue; Blvd: Boulevard; Dr: Drive; EB: eastbound; I-: Interstate; LOS: level of service; SB: southbound; SR: State Route; St: Street; WB: westbound

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Density is reported in vehicles per hour per lane. Bold font indicates unacceptable LOS E or F conditions. b

Source: Fehr & Peers (July 2018), p. 76.

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No.	Location	Туре	No Build Alternative Density ^a	No Build Alternative LOS	Build Alternative Density ^a	Build Alternative LOS
1	SR 55 SB: SR 91 on-ramp to Lincoln Ave off-ramp	Weave	97 ^b	F٥	66 ^b	F٥
2	SR 55 SB: Lincoln Ave on-ramp	Merge	94 ^b	F٥	29	D
3	SR 55 SB: Lincoln Ave on-ramp to Katella Ave off-ramp	Basic	99 b	ЕÞ	27	С
4	SR 55 SB: Katella Ave off-ramp	Diverge	20	С	25	С
5	SR 55 SB: Katella Ave on-ramp to Chapman Ave off-ramp	Weave	23	С	26	С
6	SR 55 SB: Chapman Ave WB on-ramp	Merge	38 ^b	Еb	35	D
7	SR 55 SB: Chapman Ave EB on-ramp	Merge	31	D	31	D
8	SR 55 SB: SR 22 off-ramp	Diverge	129 ^b	F٥	136 ^b	F۵
9	SR 55 SB: SR 22 on-ramp	Merge	110 ^b	F٥	131 ^b	F۵
10	SR 55 SB: 17th St WB off-ramp	Diverge	91 ^b	F٥	96 ^b	F۵
11	SR 55 SB: 17th St EB off-ramp	Diverge	80 ^b	F٥	74 ^b	F۵
12	SR 55 SB: 17th St on-ramp to 4th St off-ramp	Weave	61 ^b	Fb	54 ^b	F۵
13	SR 55 SB: SB I-5 off-ramp	Diverge	21	С	27	С
14	SR 55 SB: 4th St on-ramp	Merae	97 ^b	F ^b	66 ^b	F ^b

 Table 2.5-11c: Design Year 2055 Southbound SR 55 Freeway Operations AM Peak Hour

Notes: Ave: Avenue; Blvd: Boulevard; Dr: Drive; EB: eastbound; I-: Interstate; LOS: level of service; SB: southbound; SR: State Route; St: Street; WB: westbound

a Density is reported in vehicles per hour per lane.

b **Bold** font indicates unacceptable LOS E or F conditions.

Source: Fehr & Peers (July 2018), p. 59.

No.	Location	Туре	No Build Alternative Density ^a	No Build Alternative LOS	Build Alternative Density ^a	Build Alternative LOS
1	SR 55 SB: SR 91 on-ramp to Lincoln Ave off-ramp	Weave	30	D	29	D
2	SR 55 SB: Lincoln Ave on-ramp	Merge	30	D	30	D
3	SR 55 SB: Lincoln Ave on-ramp to Katella Ave off-ramp	Basic	30	D	30	D
4	SR 55 SB: Katella Ave off-ramp	Diverge	31	D	33	D
5	SR 55 SB: Katella Ave on-ramp to Chapman Ave off-ramp	Weave	39 ^b	ЕÞ	31	D
6	SR 55 SB: Chapman Ave WB on-ramp	Merge	61 ^b	F٥	61 ^b	F٥
7	SR 55 SB: Chapman Ave EB on-ramp	Merge	64 ^b	F٥	71 ^b	F٥
8	SR 55 SB: SR 22 off-ramp	Diverge	27	С	25	С
9	SR 55 SB: SR 22 on-ramp	Merge	31	D	35	D
10	SR 55 SB: 17th St WB off-ramp	Diverge	37 ^b	Еb	27	С
11	SR 55 SB: 17th St EB off-ramp	Diverge	50 ^b	F٥	30	D
12	SR 55 SB: 17th St on-ramp to 4th St off-ramp	Weave	46 ^b	F٥	36 ^b	ЕÞ
13	SR 55 SB: SB I-5 off-ramp	Diverge	27	С	30	D
14	SR 55 SB: 4th St on-ramp	Merge	30	D	29	D

Table 2.5-11d: Desigr	າ Year 2055 Southbound	SR 55 Freeway Op	erations PM Peak Hour
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Notes: Ave: Avenue; Blvd: Boulevard; Dr: Drive; EB: eastbound; I-: Interstate; LOS: level of service; SB: southbound; SR: State Route; St: Street; WB: westbound

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Density is reported in vehicles per hour per lane. Bold font indicates unacceptable LOS E or F conditions. b

Source: Fehr & Peers (July 2018), p. 59.

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No.	Intersection	Control	No Build Alternative Delay ^a	No Build Alternative LOS	Build Alternative Delay ^a	Build Alternative LOS
1	Tustin St/SR 55 SB off-ramp	Signal	22	С	NA	NA
2	Tustin St/Lincoln Ave	Signal	119°	F۵	52	D
3	Tustin St/SR 55 SB on-ramp	Signal	16	В	30	С
4	Santiago Blvd/Lincoln Ave	Signal	155 °	F۵	154 °	F۵
5	Santiago Blvd/SR 55 NB on-ramp	Signal	33	С	39	D
6	Meats Ave/Tustin St	Signal	33	С	37	D
7	Meats Ave/SR 55 SB ramps	Future Intersection	27	С	20	В
8	Meats Ave/SR 55 NB ramps	Future Intersection	108 °	F۵	29	С
9	Meats Ave/Santiago Blvd	Signal	76 °	E°	59 °	E°
10	Katella Ave/Tustin St	Signal	49	D	45	D
11	Katella Ave/SR 55 SB ramps	Signal	184 °	F۵	23	С
12	Katella Ave/SR 55 NB ramps	Signal	21	С	19	В
13	Katella Ave/Handy St	Signal	20	В	23	С
14	Chapman Ave/Tustin St	Signal	49	D	41	D
15	Chapman Ave/Wayfield St	Side Street Stop	33	D	35	D
16	Chapman Ave/SR 55 SB ramps	Signal	30	С	22	С
17	Chapman Ave/SR 55 NB ramps	Signal	57 °	E	39	D
18	Chapman Ave/Yorba St	Signal	81 °	F°°	78 °	E۵
19	17th St/Tustin St	Signal	86 ^c	F۵	86 ^c	F۵
20	17th St/ Ponderosa St	Side Street Stop	12	В	13	В
21	17th St/SR 55 SB ramps	Signal	33	С	37	D
22	17th St/SR 55 NB ramps	Signal	33	С	16	В
23	17th St/Yorba St/Carroll Way	Signal	70 °	E°	65 °	E°
24	4th St/Tustin St	Signal	163 °	F۵	160 °	F۵
25	4th St/SR 55 SB ramps	Signal	18	В	26	С
26	4th St/SR 55 NB ramps	Signal	82 °	F۵	30	С
27	4th St/Yorba St	Signal	108 °	F۵	101 °	F۵
28	First St/Tustin St	Signal	22	С	26	С
29	Tustin St/SR 22 WB on-ramp	Signal	28	С	27	С
30	17th St/Enderle Center Dr/Yorba St ^b	Signal	0.69	А	0.67	А
31	First St/Yorba St/Pacific St b	Signal	0.53	А	0.55	А

Notes: Ave: Avenue; Blvd: Boulevard; Dr: Drive; EB: eastbound; LOS: level of service; NB: northbound; SB: southbound; SR: State Route; St: Street; WB: westbound

a Delay is reported for seconds per vehicle.

b Volume/capacity ratio is reported for the local intersections.

c Bold text indicates unacceptable level of service.

Source: Fehr & Peers (July 2018), p. 61, and Fehr & Peers (August 2019), p. 4.

No.	Intersection	Control	No Build Alternative Delay ^a	No Build Alternative LOS	Build Alternative Delay ^a	Build Alternative LOS
1	Tustin St/SR 55 SB off-ramp	Signal	131 °	F۵	NA	NA
2	Tustin St/Lincoln Ave	Signal	103 °	F۵	98 °	F۵
3	Tustin St/SR 55 SB on-ramp	Signal	108 °	F۵	87 °	F۵
4	Santiago Blvd/Lincoln Ave	Signal	95 °	F۵	72 °	Е°
5	Santiago Blvd/SR 55 NB on-ramp	Signal	43	D	54	D
6	Meats Ave/Tustin St	Signal	170 °	F۵	169 °	F۵
7	Meats Ave/SR 55 SB ramps	Future Intersection	26	С	26	С
8	Meats Ave/SR 55 NB ramps	Future Intersection	44	D	45	D
9	Meats Ave/Santiago Blvd	Signal	74 °	Е°	73 °	Е°
10	Katella Ave/Tustin St	Signal	100 °	F۵	98 °	F۵
11	Katella Ave/SR 55 SB ramps	Signal	31	С	19	В
12	Katella Ave/SR 55 NB ramps	Signal	30	С	41	D
13	Katella Ave/Handy St	Signal	17	В	26	С
14	Chapman Ave/Tustin St	Signal	64 °	E۵	63 °	E۵
15	Chapman Ave/Wayfield St	Side Street Stop	272 °	F۵	218 °	F۵
16	Chapman Ave/SR 55 SB ramps	Signal	32	С	36	D
17	Chapman Ave/SR 55 NB ramps	Signal	33	С	30	С
18	Chapman Ave/Yorba St	Signal	79 °	E۵	42	D
19	17th St/Tustin St	Signal	124 °	F۵	123 °	F۵
20	17th St/ Ponderosa St	Side Street Stop	28	D	22	С
21	17th St/SR 55 SB ramps	Signal	16	В	31	С
22	17th St/SR 55 NB ramps	Signal	115 °	F۵	108 °	F۵
23	17th St/Yorba St/Carroll Way	Signal	48	D	52	D
24	4th St/Tustin St	Signal	185 °	F۵	154 °	F۵
25	4th St/SR 55 SB ramps	Signal	37	D	27	С
26	4th St/SR 55 NB ramps	Signal	38	D	34	С
27	4th St/Yorba St	Signal	203 °	F۵	202 °	F۵
28	First St/Tustin St	Signal	66 °	E۵	45	D
29	Tustin St/SR 22 WB on-ramp	Signal	17	В	17	В
30	17th St/Enderle Center Dr/Yorba St ^b	Signal	0.62	А	0.62	А
31	First St/Yorba St/Pacific St b	Signal	0.66	А	0.65	А

Notes: Ave: Avenue; Blvd: Boulevard; Dr: Drive; EB: eastbound; LOS: level of service; NB: northbound; SB: southbound; SR: State Route; St: Street; WB: westbound

a Delay is reported for seconds per vehicle.

b Volume/capacity ratio is reported for the local intersections.

c **Bold** text indicates unacceptable level of service.

Source: Fehr & Peers (July 2018), p. 62., and Fehr & Peers (August 2019), p. 5.

Table 2.5-13a: Design Year 20	055 SR 55 Corridor Peak Hour	Travel Time AM Peak Hour
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Direction	Location	No Build Alternative Travel Time (min:sec)	No Build Alternative Speed	Build Alternative Travel Time (min:sec)	Build Alternative Speed
NB SR 55	I-5 to SR 22	3:00	51	2:20	65
NB SR 55	SR 22 to SR 91	9:30	30	9:40	29
NB SR 55	I-5 to SR 91 (Total)	12:30	35	12:00	36
SB SR 55	SR 91 to SR 22	10:40	27	6:00	48
SB SR 55	SR 22 to I-5	6:20	24	6:30	23
SB SR 55	SR 91 to I-5 (Total)	17:00	26	12:30	35

Notes: I-: Interstate; min: minutes; NB: northbound; SB: southbound; sec: seconds; SR: State Route. Source: Fehr & Peers (July 2018), p. 63.

Table 2.5-13b: Design Year 2055 SR 55 Corridor Peak Hour Travel Time PM Peak Hour

Direction	Location	No Build Alternative Travel Time (min:sec)	No Build Alternative Speed	Build Alternative Travel Time (min:sec)	Build Alternative Speed
NB SR 55	I-5 to SR 22	5:10	30	4:30	34
NB SR 55	SR 22 to SR 91	12:50	22	13:20	21
NB SR 55	I-5 to SR 91 (Total)	18:00	24	17:50	25
SB SR 55	SR 91 to SR 22	5:00	57	4:40	62
SB SR 55	SR 22 to I-5	3:00	51	2:20	64
SB SR 55	SR 91 to I-5 (Total)	8:00	55	7:00	63

Notes: I-: Interstate; min: minutes; NB: northbound; SB: southbound; sec: seconds; SR: State Route. Source: Fehr & Peers (July 2018), p. 63.

Table 2.5-14: Design Year 2055 SR 55 Systemwide Traffic Metrics

Traffic Metrics	AM Peak Period No Build Alternative	AM Peak Period Build Alternative	PM Peak Period No Build Alternative	PM Peak Period Build Alternative
Number of Vehicles Served	214,140	217,490	252,070	254,370
VHD (vehicle hours of delay)	15,880	13,730	16,630	15,900
Delay per Vehicle (sec/veh)	260	220	230	220

Note: sec/veh: seconds per vehicle Source: Fehr & Peers (July 2018), p. 65

Build Alternative (Preferred Alternative)

Under this alternative the proposed project improvement would be implemented. Under Design Year 2055, the SR 55/Meats Avenue interchange was assumed to be in place.

Opening Year 2035 Conditions

The Opening Year 2035 operations analysis results for the Build Alternative are summarized in Table 2.5-7a (northbound SR 55 AM), Table 2.5-7b (northbound SR 55 PM), Table 2.5-7c (southbound SR 55 AM), Table 2.5-7d (southbound SR 55 PM), Table 2.5-8a (intersection AM), Table 2.5-8b (intersection AM), Table 2.5-9a (travel time AM), Table 2.5-9b (travel time PM), and Table 2.5-10 (systemwide traffic metrics).

Freeway Operations: During the AM peak hour, additional capacity along northbound SR 55 mainline between I-5 and SR 22 would substantially improve traffic operations at the northbound I-5 on-ramp from LOS F to C conditions. Noticeable improvements would also occur on other northbound SR 55 study locations between I-5 and SR 22. North of SR 22, northbound SR 55 would operate at conditions similar to the No Build Alternative. In the southbound direction, the proposed improvements under the Build Alternative would substantially improve freeway operations and result in LOS D or better conditions on southbound SR 55 from Lincoln Avenue to Katella Avenue. Southbound SR 55 segments south of Chapman Avenue would expect similar or higher density compared to the No Build Alternative because more traffic would be served by the Build Alternative. During the PM peak hour, the Build Alternative would help to move traffic relatively faster between I-5 and SR 22 due to additional capacity to the mainline segment; however, the bottlenecks outside the study corridor (e.g., westbound SR 22 and eastbound SR 91) would remain; and, as a result, northbound SR 55 would still operate at LOS F conditions under the Build Alternative. In the southbound direction, the Build Alternative would resolve the capacity constraints by introducing additional capacity to this segment and would substantially improve traffic operations at most of those locations from LOS E/F to D or better during the PM peak hour.

Intersection Operations: Most of the study intersections would operate at LOS D or better during the AM peak hour, and the Build Alternative would improve one deficient intersection to LOS D or better. Under the PM peak hour, the Build Alternative would improve three of the deficient intersections to LOS D or better and two deficient intersections from LOS F to LOS E.

SR 55 Corridor Travel Time: During the AM peak hour, the Build Alternative would increase the northbound SR 55 travel speed to 65 mph between I-5 and SR 22 by providing additional capacity through the stretch; while the vehicle speeds between SR 22 and SR 91 would remain similar to the No Build Alternative. In the southbound direction, proposed improvements under the Build Alternative would significantly improve traffic operations and allow traffic to get through southbound SR 55 more quickly, which would consequently increase the average speed from 30 mph to approximately 50 mph on southbound SR 55 from SR 91 to SR 22. During the PM peak hour, additional capacity proposed under the Build Alternative would increase the northbound SR 55 speed between I-5 and SR 22 from 30 to 34 mph and would maintain the travel time for northbound SR 55 to no lower than the No Build Alternative while serving more traffic through the corridor. In the southbound direction, the Build Alternative would noticeably improve traffic flow on southbound SR 55 and increase the speed to a free-flow speed throughout the study corridor.

Systemwide Traffic Metrics: Compared to the No Build Alternative, the Build Alternative would serve 1,750 (or 2 percent) more vehicles and reduce the total delay by 1,890 vehicle-hours or 19 percent during the AM peak period and would serve 1,480 (or 1 percent) more vehicles and reduce the total delay by 820 vehicle-hours or 6 percent during the PM peak period. The average delay per vehicle under the Build Alternative would decrease by 21 and 8 percent compared to the No Build Alternative during the AM and PM peak periods, respectively.

In a summary, compared to the No Build Alternative, the Build Alternative would result in the following traffic operational conditions under the Opening Year 2035:

2035 AM Peak

- Improve traffic operational service level from LOS E or F to acceptable LOS D or better at six freeway locations
- Improve traffic operational service level from LOS E or F to acceptable LOS D or better at one study intersection
- Reduce northbound and southbound SR 55 travel time by 4 and 22 percent, respectively
- Reduce the network vehicle-hours of delay by 19 percent while serving more vehicles through the network

2035 PM Peak

- Improve traffic operational service level from LOS E or F to acceptable LOS D or better at four freeway locations
- Improve traffic operational service level from LOS E or F to acceptable LOS D or better at three study intersections
- Reduce northbound and southbound SR 55 travel time by 1 and 11 percent, respectively
- Reduce the network vehicle-hours of delay by 6 percent while serving more vehicles through the network

Design Year 2055 Conditions

The Design Year 2055 operations analysis results for the No Build Alternative are summarized in Table 2.5-11a (northbound SR 55 AM), Table 2.5-11b (northbound SR 55 PM), Table 2.5-11c (southbound SR 55 AM), Table 2.5-11d (southbound SR 55 PM), Table 2.5-12a (intersection AM), Table 2.5-12b (intersection AM), Table 2.5-13a (travel time AM), Table 2.5-13b (travel time PM), and Table 2.5-14 (systemwide traffic metrics).

Freeway Operations: During the AM peak hour, additional capacity along northbound SR 55 mainline between I-5 and SR 22 would substantially improve traffic operations between the northbound I-5 on-ramp and 17th Street off-ramp and improve the northbound I-5 on-ramp from LOS F to LOS C conditions. North of SR 22, northbound SR 55 would operate at similar conditions under the No Build and Build Alternatives. In the southbound direction, the proposed improvements under the Build Alternative would substantially improve freeway operations and result in LOS D or better conditions on southbound SR 55 from Lincoln Avenue to Katella

Avenue. Southbound SR 55 segments south of SR 22 would expect similar or higher density compared to the No Build Alternative because more traffic would be served by the Build Alternative. During the PM peak hour, the Build Alternative would help to move traffic relatively faster between I-5 and SR 22 due to additional capacity to the mainline segment; however, the bottlenecks outside the study corridor (e.g., westbound SR 22 and eastbound SR 91) would remain; and, as a result, northbound SR 55 would still operate at LOS F conditions under the Build Alternative. In the southbound direction, the Build Alternative would resolve the capacity constraints by introducing additional capacity to this segment, and substantially improve traffic operations at several locations from LOS E/F to D or better during the PM peak hour.

Intersection Operations: The Build Alternative would reduce the number of deficient intersections from 12 to 7 locations during the AM peak hour. Under the PM peak hour, the Build Alternative would improve two deficient intersections to LOS D or better and one deficient intersection from LOS F to LOS E.

SR 55 Corridor Travel Time: During the AM peak hour, the Build Alternative would increase the speed to 65 mph between I-5 and SR 22 by providing additional capacity through the stretch; however, the vehicle speeds between SR 22 and SR 91 would remain similar to the No Build Alternative. In the southbound direction, proposed improvements under the Build Alternative would significantly improve traffic operations and allow traffic travel through southbound SR 55 more quickly, which would consequently increase the average speed from 27 mph to 48 mph on southbound SR 55 from SR 91 to SR 22. During the PM peak hour, additional capacity proposed under the Build Alternative would increase the northbound SR 55 speed between I-5 and SR 22 from 30 to 34 mph and would maintain the travel time for northbound SR 55 no lower than the No Build Alternative while serving more traffic through the corridor. In the southbound SR 55 and increase the speed to a free-flow speed throughout the study corridor.

Systemwide Traffic Metrics: Compared to the No Build Alternative, the Build Alternative would serve 3,350 (or 2 percent) more vehicles and reduce the total delay by 2,150 vehicle-hours or 14 percent during the AM peak period and would serve 2,300 (or 1 percent) more vehicles and reduce the total delay by 730 vehicle-hours or 4 percent during the PM peak period. The average delay per vehicle under the Build Alternative would decrease by 15 and 4 percent compared to the No Build Alternative during the AM and PM peak periods, respectively.

In a summary, compared to the No Build Alternative, the Build Alternative would result in the following traffic operational conditions under the Design Year 2055:

2055 AM Peak

- Improve traffic operational service level from LOS E or F to acceptable LOS D or better at six freeway locations
- Improve traffic operational service level from LOS E or F to acceptable LOS D or better at four study intersections
- Reduce northbound and southbound SR 55 travel time by 4 and 26 percent, respectively
- Reduce the network vehicle-hours of delay by 14 percent while serving more vehicles through the network

2055 PM Peak

- Improve traffic operational service level from LOS E or F to acceptable LOS D or better at three freeway locations
- Improve traffic operational service level from LOS E or F to acceptable LOS D or better at two study intersections
- Reduce northbound and southbound SR 55 travel time by 1 and 13 percent, respectively
- Reduce the network vehicle-hours of delay by 4 percent while serving more vehicles through the network

Pedestrian and Bicycle Facilities

The Build Alternative includes minor modifications to existing arterials at their crossings of SR 55 to accommodate the permanent improvements to SR 55 and the ramps provided by the Build Alternative. If any pedestrian or bicycle facilities are modified during construction, they would be returned to their existing cross sections and to current standards no later than the completion of construction of the improvements in the Build Alternative. Specifically, at arterial crossings where modifications to the sidewalks are needed as part of the Build Alternative, those modifications would be consistent with ADA accessibility requirements. The permanent improvements in the Build Alternative solution of the arterial overcrossings or under crossings or on the east and west sides of the SR 55 corridor.

2.5.4 Avoidance, Minimization, and/or Mitigation Measures

The project will incorporate Project Features PF-T-1 and PF-T-2, outlined above in Section 2.5.3, Environmental Consequences, to help avoid and/or minimize potential impacts. No additional avoidance, minimization, and/or mitigation measures other than the Standard Project Features are required.

2.6 Visual/Aesthetics

2.6.1 Regulatory Setting

The NEPA of 1969 as amended establishes that the federal government will use all practicable means to ensure all Americans safe, healthful, productive, and aesthetically (emphasis added) and culturally pleasing surroundings (42 USC 4331[b][2]). To further emphasize this point, the FHWA in its implementation of NEPA (23 USC 109[h]) directs that final decisions on projects are to be made in the best overall public interest, taking into account adverse environmental impacts including, among others, the destruction or disruption of aesthetic values.

CEQA establishes that it is the policy of the State to take all action necessary to provide the people of the state "with...enjoyment of aesthetic, natural, scenic and historic environmental qualities" (California Public Resources Code [PRC] Section 21001[b]).

2.6.2 Affected Environment

The information in this section is based on the Visual Impact Assessment (VIA) (October 2018).

2.6.2.1 Visual Setting

The project location and setting provide for the context for determining the type of changes to the existing visual environment. The proposed project is located on SR 55 between just north of the I-5/SR 55 interchange and just south of the SR 55/SR 91 interchange, in the cities of Anaheim, Orange, Santa Ana, and Tustin in Orange County, California (See Figure 1.1-1). The project is located less than 3 miles east of the Santa Ana River, around the Santa Ana Valley of Southern California. The landscape is characterized by man-made development, with the majority of structures consisting of living, working, and business buildings, roads, and utilities. The land use within the corridor or project corridor is primarily urban that is developed with freeways (SR 55 and SR 22) and residential, commercial, and industrial uses such as hospitals, a church, schools, parks, and offices. The project corridor is defined as the area of land that is visible from, adjacent to, and outside the highway right-of-way and is determined by topography, vegetation, and viewing distance. SR 55 is not a designated State Scenic Highway, nor is it labeled as any other type of view corridor. SR 55 also does not include any scenic resources.

Visual Resources and Resource Change

Visual resources of the project setting are defined and identified below by assessing visual character and visual quality in the project corridor. Resource change is assessed by evaluating the visual character and the visual quality of the visual resources that comprise the project corridor before and after the construction of the proposed project.

The visual character of the proposed project will be compatible with the existing visual character of the corridor.

Key View #1

The existing view along northbound and southbound SR 55 between 4th Street and 17th Street is below grade of the surrounding facilities (Figure 2.6-1). It consists of a wide, 10-lane freeway with existing retaining walls of varying height, evenly landscaped slopes, protruding trees along the outer limits, tall buildings to the left, and a distant view of hilltops in the background. The strong lines of the existing lanes on the freeway draw the eyes directly toward the hills in the distance and contrast with the soft and irregular shapes of the surrounding vegetation. The proposed retaining wall along southbound SR 55 between 4th Street and 17th Street will be pushed out 10 to 15 feet, parallel to the existing walls, thus maintaining similar forms, lines, colors, and textures and height within the area. The existing 17th Street northbound on-ramp auxiliary lane will be realigned to the east, but within this view it will not be seen.

Key View #2

The southbound SR 55 Katella Avenue off-ramp consists of an aesthetically treated retaining wall to the left of the view with heavily tree-lined canopies behind it and a uniform, sloped landscape to the right, adjacent to the freeway underpass (Figure 2.6-2). Between the bottom of the slope and the edge of the travel way is an existing storm drain. The existing utility lines and poles behind the trees create uniform lines across the left of the view. In this view, the proposed widening of the southbound SR 55 Katella Avenue off-ramp will cut into the existing landscape but will not visually compromise any vertical elevation characteristics. The additional lane will be continuous of the existing road elevation and angle. The storm drain will most likely need to be relocated 15 feet below the existing ramp.

Key View #3

The existing Park and Ride lot is located at the northeast corner of the on-ramp southbound SR 55 and North Tustin Avenue intersection (Figure 2.6-3). The SR 55 freeway is approximately 25 feet above grade of the existing Park and Ride lot with a sloped landscaped buffer and a 4-foot retaining wall adjacent to the sidewalk. The street median, retaining wall, lot elevation, top of slope, and freeway ramp all create horizontal lines across the view. The existing utility poles encroach into the horizontal lines and break up what could be a strong horizontal element. The existing trees soften the view. The proposed relocation of the Lincoln Avenue southbound off-ramp proposes a new off-ramp bridge that will cut into the side of the existing slope and gradually descend to intersect with North Tustin Street. A new retaining wall will extend from the sidewalk of Lincoln Avenue to the edge of the middle of the existing Park and Ride lot. It will start at 20 feet high and taper down to 4 feet tall. Another proposed retaining wall will be at the top of the slope, parallel to the existing Park and Ride lot. It will start at 14 feet tall and taper down to 4 feet tall.

Key View #4

The existing southbound SR 55 Lincoln Avenue off-ramp is located about 1,300 feet north of the existing Park and Ride lot located at the northeast corner of the on-ramp southbound SR 55 and North Tustin Avenue (Figure 2.6-4). North of this off-ramp, the existing SR 55 freeway is below grade of North Tustin Street. South of this off-ramp, existing SR 55 is above grade of north past the proposed southbound Lincoln Avenue off-ramp location. At this key view location, the off-ramp is located to the left and SR 55 is elevating in the background on the right.

Figure 2.6-1. Key View 1





Figure 2.6-2. Key View 2

Figure 2.6-3. Key View 3



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Figure 2.6-4. Key View 4



The proposed Park and Ride lot limits will be constructed on the existing off-ramp, extending past the existing utility pole. A proposed crosswalk and vehicular entrance to the Park and Ride lot are also proposed, but the existing median will remain untouched. The start of the proposed off-ramp relocation will be slightly visible in this view, as it runs parallel to SR 55.

Viewer Groups

Neighbors (people with views to the road) and highway users (people with views from the road) are the primary view groups associated with the proposed project. The public views to the project site include motorists along SR 55 and commercial users across from the existing Park and Ride lot along North Tustin Avenue and Lincoln Avenue. Motorists' (highway users') views of the project corridor mostly consist of the wide, 10-lane freeway, existing retaining walls with aesthetic treatment, utility poles and lines, and tree canopies protruding from behind the retaining walls in the distance and adjacent to the walls. In some sections of the freeway where there are no retaining walls, the motorists' views will change to include commercial and residential buildings. Viewers outside the project corridor (neighbors) have limited views because the existing SR 55 freeway is either several feet below grade of the surrounding facilities where the views are mostly screened by existing retaining walls, or it is at least several feet above grade of surrounding facilities. Retail, commercial, and recreational users near the existing Lincoln Avenue off-ramp and Park and Ride lot will have minor views of the proposed relocation of the off-ramp, if any. However, these viewer activities do not have long exposure to the adjacent freeway because viewers' focus would be on active tasks such as ordering coffee, getting gas, or buying a car instead of passive tasks such as sightseeing or relaxing by the road.

Viewer Response

Viewer response measures the change in viewer exposure and viewer sensitivity. Viewer response predicts how the public might react to visual changes brought about by physical changes resulting from the Build Alternative. The resulting level of visual impact is determined by averaging the severity of the resource change with the degree to which people are likely to be affected by the change. Viewer exposure is determined by the number of viewers who would be exposed to views of the Build Alternative, with a combination of factors such as the viewer's activity, distance from the view, and duration of the view. Motorists (highway users) would hardly notice the changes from the Build Alternative because the widening would be accompanied by a retaining wall in similar design, color, and height. The speeds at which the motorists are driving would be too fast for them to be distracted or take much notice of any minor changes. Retail, community, and recreational viewers would have limited exposure to the Park and Ride lot because the nearby development is several feet below grade of the adjacent street; thus their exposure would be distant and short, if any.

Viewer sensitivity is defined both as the viewers' concern for scenic quality and their response to changes in the visual resources that make up the view. The elements that are taken into account are viewer activity, local values, and cultural significance. Motorists have low sensitivity to the existing project corridor because it does not have any scenic highway qualities. The retaining walls help to keep the freeway corridor uniform and harmonious and will be replaced with a similar retaining wall. Retail and commercial viewer sensitivity to the existing project limits are low because of limited exposure and lack of elements having scenic qualities.

2.6.3 Environmental Consequences

2.6.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

Construction of the SR 55 Improvement Project would directly result in temporary visual changes as a result of clearing and grubbing, grading, hauling dirt, paving and other construction activities. Construction of the project would result in views of construction equipment, staging areas, and stockpiles. The Build Alternative between 4th Street and 17th Street on the southbound side of SR 55 to facilitate construction of a retaining wall would require removal of a portion of a carport at the apartment complex. This location is not within key views and no loss of scenic resources would occur. Vegetation is generally non-native and does not substantially contribute to the overall visual character and quality of key views. After construction is completed, temporary impacts would end. Because construction, no permanent change in or indirect effect to visual character and quality would occur. The potential visual impacts during construction of the Build Alternative would be minimal.

No Build Alternative

The No Build Alternative would not include the construction of any of the project improvements on SR 55 and, therefore, would not result in direct or indirect changes in views to/from the project segment of SR 55.

2.6.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

The visual quality of the existing corridor will be slightly altered by the proposed project. The proposed Build Alternative in Figure 2.6-1, Key View 1, and Figure 2.6-2, Key View 2, are shown to be minor and subtle. The proposed elements are continuous with the existing infrastructure and do not encroach or obstruct any existing views or elements. The visual quality for all key views will be harmonious, orderly, and coherent with the existing visual quality. The proposed Build Alternative for Key Views 1 and 2 maintains a very similar composition to the existing infrastructure and thus has very little impact on vividness. The existing elements will remain intact and have unity with the proposed elements.

In Figure 2.6-3, Key View 3, and Figure 2.6-4, Key View 4, the proposed Build Alternative will increase in vividness but still maintain its compositional elements. The proposed built elements will be compatible with the existing surrounding environment. The scale, form, colors, and texture will maintain the visual integrity of the project. The proposed off-ramp relocation will keep similar characteristics to those along the street level corridor adjacent to the SR 55 freeway. The proposed off-ramp relocation will also be adjacent to the existing on-ramp location, unifying the structural elements of the highway.

The proposed Build Alternative would result in low changes to both visual character and visual quality, thus resulting in an overall low resource change. In addition, the average response of the viewer groups is anticipated to be low. Indirect or secondary impacts are not anticipated to occur.

The following Project Features have been identified to further enhance visual quality within the corridor:

- **PF-VIS-1**: Architectural treatments and features will be included in the final project design to minimize the loss of, and improve the visual quality on, the project segment of SR 55. The architectural treatments will be developed for retaining walls and noise barriers consistent with the Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment along Orange County's Transportation Network. All wall architectural treatments will be submitted to the California Department of Transportation (Caltrans) District Landscape Architect for review and approval. During construction, the construction contractor will implement the architectural treatments as shown in the project specifications.
- **PF-VIS-2**: During final design, a landscape architect will prepare a Landscape Plan to address landscape treatment within the State right-of-way along the project segment of SR 55. The Landscape Plan will be submitted to the Caltrans District Landscape Architect for review and approval. During construction, the construction contractor will implement the provisions of the approved Landscape Plan as shown in the project specification. The Landscape Plan may include some of the following:
 - Identifying/defining the minimum standards for providing landscaping: available land, no conflicts with traffic operations and safety, safe access for maintenance and trash removal, and access to irrigation and water if needed
 - Identifying landscaping and hardscape concepts and materials to maintain or improve the visual character of the existing landscaping in the SR 55 right-of-way from south of I-5 to SR 91, including the mainline, ramps, and along noise barriers and retaining walls. The hardscape concepts and materials shall be consistent with the *Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment along Orange County's Transportation Network* (Dames & Moore 1995)
 - Incorporating applicable procedures and requirements in the Caltrans Highway Design Manual, Section 902.1, Planting Guidance (Caltrans 2016d)
 - Using drought-resistant plants and xeric (adapted to arid conditions) landscaping techniques
 - Providing low-maintenance, erosion-control groundcover species and lowheight shrubs in the palette to preserve existing views and prevent erosion
 - Providing landscaping as soon as possible in the construction process to minimize bare soil and potential erosion effects
 - Ensuring that the landscape plant palette conforms with adopted Caltrans standard specifications
 - Replacing landscaping on the TCEs. The Landscape Plan will require coordination with the owners of the TCEs regarding replacement landscaping to its original or better condition after completion of use.

No Build Alternative

The No Build Alternative would not include the construction of any of the project improvements on SR 55 and, therefore, would not result in changes in views to/from the project segment of SR 55. No indirect or secondary impacts on visual resources would result from implementation of the No Build Alternative. Therefore, the No Build Alternative would not result in long-term visual impacts on and in the vicinity of the project segment of SR 55.

2.6.4 Avoidance, Minimization, and/or Mitigation Measures

The project will incorporate the Project Features PF-VIS-1 and PF-VIS-2, outlined above in Section 2.6.3, Environmental Consequences, to help avoid and/or minimize potential impacts. No additional avoidance, minimization, and/or mitigation measures other than the Standard Project Features are required.

2.7 Cultural Resources

2.7.1 Regulatory Setting

The term "cultural resources," as used in this document, refers to the "built environment" (e.g., structures, bridges, railroads, water conveyance systems, etc.), places of traditional or cultural importance, and archaeological sites (both prehistoric and historic), regardless of significance. Under federal and State laws, cultural resources that meet certain criteria of significance are referred to by various terms including "historic properties," "historic sites," "historical resources," and "tribal cultural resources." Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act (NHPA) of 1966, as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the NRHP. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 CFR 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (PA) among the FHWA, the ACHP, the California State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the ACHP's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Program (23 USC 327).

CEQA requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as "unique" archaeological resources. California PRC Section 5024.1 established the California Register of Historical Resources (CRHR) and outlined the necessary criteria for a cultural resource to be considered eligible for listing in the CRHR and, therefore, a historical resource. Historical resources are defined in PRC Section 5020.1(j). In 2015, AB 52 added the term "tribal cultural resources" to CEQA, and AB 52 is commonly referenced instead of CEQA when discussing the process to identify tribal cultural resources (as well as identifying measures to avoid, preserve, or mitigate effects to them). Defined in PRC Section 21074(a), a tribal cultural resource is a CRHR or local register eligible site, feature, place, cultural landscape, or object which has a cultural value to a California Native American tribe. Tribal cultural resources are referenced in PRC Section 21083.2.

PRC Section 5024 requires State agencies to identify and protect State-owned historical resources that meet the NRHP listing criteria. It further requires the Department to inventory State-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require State agencies to provide notice to and consult with the SHPO before altering, transferring, relocating, or demolishing State-owned historical resources that are listed on or are eligible for inclusion in the NRHP or are registered or eligible for registration as California Historical Landmarks.

Procedures for compliance with PRC Section 5024 are outlined in a MOU¹ between the Department and SHPO, Affected Environment effective January 1, 2015. For most federal-aid projects on the State Highway System, compliance with the Section 106 PA will satisfy the requirements of PRC Section 5024.

2.7.2 Affected Environment

This section summarizes information from the *Historic Property Survey Report* (HPSR) (March 2019; signed April 2019).

2.7.2.1 Methods

Area of Potential Effects

The Area of Potential Effects (APE) is established to identify the geographic area within which the proposed project may directly or indirectly cause alterations in the character or use of cultural resources. The APE covers an area approximately 7.5 miles in length along SR 55 between I-5 and SR 91. The area is generally urban and suburban in nature. The APE includes both the direct archaeological study area (Area of Direct Impact [ADI] or Direct APE) and the historic architectural study (Area of Indirect Impact [AII] or Indirect APE) area. The archaeological study area consists of the area bounded by the ADI. This ADI became the study area used for archaeological studies because it represents the maximum amount of potential ground disturbances. The proposed project does not require permanent acquisition of new right-of-way, and the ADI currently includes only the existing Caltrans right-of-way to account for staging and an approximate 200-foot temporary construction easement as described in detail in Section 2.3.2.3 (hereinafter called Direct APE). The historic architectural study consists of the areas bounded by the ADI and the area of AII. To account for indirect effects, the APE was expanded to include the entirety of legal parcels, generally within 1,000 feet of proposed improvements on SR 55 (hereinafter called Indirect APE). In areas where no improvements are proposed, both the direct and indirect APEs are shared and are located on the right-of-way to allow for potential construction staging. Additionally, within the majority of these shared APE locations, existing sound walls are in place between the highway; and adjacent development and will not be impacted by project construction.

In addition, the vertical APE was extended up to 32 feet below grade in areas south of 17th Street to account for excavations associated with relocation of retaining walls along SR 55 that are below grade. If relocated walls require foundations, pile excavation within these areas would be drilled or driven to extend an additional 45 feet below the freeway surface or up to 77 feet below the original ground surface. Relocation of the southbound Lincoln Avenue off-ramp would require construction of new bridge pilings that would extend up to 60 feet below original ground surface. If storm drain relocation is required, excavation would extend up to 10 feet below the freeway. All other ground disturbance is not anticipated to exceed 5 feet below the ground surface.

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¹ The MOU is located on the SER at <u>http://www.dot.ca.gov/ser/vol2/5024mou_15.pdf</u>.

Records Search

On November 6 and 8, 2017, a records search was conducted at the South Central Coastal Information Center (SCCIC) of the California Historical Resources Information System (CHRIS) located at California State University, Fullerton. The CHRIS is maintained under the direction of the California Office of Historic Preservation. The records search included a review of all recorded prehistoric and historic cultural resources within a 1-mile radius of the project APE.

The records search reviewed reports, site records, historic maps, and the Historic Property Data File (HPDF) for Orange County on file at the SCCIC. The HPDF provides information about resources listed in or determined eligible for listing in the NRHP and the CRHR. It also provides information on resources that have been designated as California Historical Landmarks and California Points of Historical Interest.

Numerous post-World War II residential tracts are located within the project APE. Post-war residential tracts were evaluated in accordance with *Tract Housing in California, 1945-1973: A Context for National Register Evaluations* (Caltrans 2011a). In order to assess post-war residential tracts, tract maps were reviewed to determine the developers of the tracts, research was conducted regarding both the developers and neighborhoods, and an assessment of integrity was made of the tracts located within the APE. Properties determined to meet the exemption criteria defined in Attachment 4 of the PA were not evaluated for this HRER. The following additional sources of information were consulted in the process of completing this report (March 2019):

- NRHP website (https://www.nps.gov/subjects/nationalregister/index.htm), through March 2018
- California Historical Landmarks (CHLs)
- California Points of Historical Interest (CPHI)
- City of Anaheim public records, Office of the City Clerk, City of Anaheim
- City of Anaheim public library
- Anaheim Historical Society, City of Anaheim
- City of Santa Ana public records
- City of Santa Ana public library
- Santa Ana Historical Preservation Society, City of Santa Ana
- City of Orange public records, City Clerk Office, City of Orange
- City of Orange public library
- Orange Community Historical Society, City of Orange
- City of Tustin public records, City Clerk Office, City of Tustin
- Orange County public library (Tustin branch), City of Tustin
- Tustin Area Historical Society and Museum, City of Tustin
- Orange County public records, Hall of Records, City of Santa Ana
- Orange County Historical Society, City of Santa Ana

Letters requesting information on cultural resources were sent to relevant local government, local public libraries, and local historical society/historic preservation groups were sent via U.S. Postal

Service (USPS) on January 26, 2018, or emailed to listed addresses. Organizations contacted included (HPSR; March 2019) the following:

- Planning & Zoning Department, 200 Anaheim Boulevard, Anaheim
- Anaheim Central Public Library, 500 West Broadway, Anaheim
- Anaheim Historical Society, P.O. Box 927, Anaheim
- Planning and Building Agency, 20 Civic Center Plaza, Santa Ana
- Santa Ana Public Library, 26 Civic Center Plaza, Santa Ana
- Santa Ana Historical Preservation Society, 120 West Civic Center Drive, Santa Ana
- Planning Division, 300 East Chapman Avenue, Orange
- Orange Public Library, 407 East Chapman Avenue, Orange
- Orange Community Historical Society, P.O. Box 5484, Orange
- Planning and Zoning Division, 300 Centennial Way, Tustin
- Orange County Public Library (Tustin branch), 345 East Main Street, Tustin
- Tustin Area Historical Society and Museum, 395 El Camino Real, Tustin
- Orange County Planning Department, 300 North Flower Street, Santa Ana
- Orange County Historical Society, P.O. Box 10984, Santa Ana

The City of Orange provided a pre-historic archaeological sensitivity map for the County, including some areas within the APE. The Anaheim Historical Society provided information on three listed historical resources and eight potential historical resources near the APE. No known cultural resources located within the APE were identified as a result of this public participation process.

Field Surveys

An intensive-level survey was conducted on December 14, 2017, and January 10, 2018, of all properties within the APE. Each parcel was observed from the public right-of-way. Digital photographs and notes were taken for all buildings, groups of buildings, and/or structures visible from the public right-of-way. Subdivisions were informally surveyed to determine common architectural styles and alterations.

In addition, a pedestrian survey was conducted for archaeological resources along and adjacent to accessible and unpaved areas of the APE on December 20, 2017. Because the entire APE of the project is situated mostly within the SR 55 right-of-way, the survey was conducted primarily along the unpaved areas immediately adjacent to the APE, allowing sufficient observation of all exposed ground surface, including those adjacent to freeway ramps and roads. The survey consisted of less than 1 percent intensive survey and nearly 100 percent visual observation from a distance due to access and safety restrictions. Survey transects in all accessible, unpaved areas, were conducted at 3- to 5-meter intervals. In unpaved areas, ground visibility within the APE ranged from 80 percent to 100 percent, limited by native and introduced landscaped vegetation, which consisted of eucalyptus trees (*Eucalyptus* spp.), California buckwheat (*Eriogonum fasciculatum*), chamise (*Adenostoma fasciculatum*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), and other native plants. Observed native soils consist of light to medium-brown coarse silt and exposed sedimentary bedrock.

Native American Consultation

The Native American Heritage Commission (NAHC) was contacted on February 1, 2018, to request a search of the Sacred Lands File (SLF) and a list of Native American contacts with traditional or historical ties to the project area under AB 52. In a letter dated February 2, 2018, the NAHC reported that a search of the SLF was completed with negative results. The NAHC also provided a list of Native American contacts who should be consulted regarding the project.

Letters requesting information about cultural resources in the project area were sent via certified, return receipt, first-class mail to all of the tribal contacts identified by the NAHC on March 14, 2018. The tribal contacts included :

- Ralph Goff, Chairperson, Campo Band of Mission Indians
- Michael Garcia, Vice Chairperson, Ewiiaapaayp Tribal Office
- Robert Pinto, Chairperson, Ewiiaapaayp Tribal Office
- Andrew Salas, Chairperson, Gabrieleno Band of Mission Indians Kizh Nation
- Anthony Morales, Chairperson, Gabrieleno/Tongva San Gabriel Band of Mission Indians
- Sandonne Goad, Chairperson, Gabrielino/Tongva Nation
- Robert Dorame, Chairperson, Gabrielino Tongva Indians of California Tribal Council
- Charles Alvarez, Chairperson, Gabrielino-Tongva Tribe
- Erica Pinto, Chairperson, Jamul Indian Village
- Sonia Johnston, Chairperson, Juaneño Band of Mission Indians
- Matias Belardes, Chairperson, Juaneño Band of Mission Indians Acjachemen Nation -Belardes
- Teresa Romero, Chairperson, Juaneño Band of Mission Indians Acjachemen Nation -Romero
- Gwendolyn Parada, Chairperson, La Posta Band of Mission Indians
- Javaughn Miller, Tribal Administrator, La Posta Band of Mission Indians
- Angela Elliott Santos, Chairperson, Manzanita Band of Kumeyaay Nation
- John Valenzuela, Chairperson, San Fernando Band of Mission Indians
- Allen F. Lawson, Chairperson, San Pasqual Band of Mission Indians
- Cody J. Martinez, Chairperson, Sycuan Band of Kumeyaay Nation
- Robert Welch, Chairperson, Viejas Band of Kumeyaay Indians

Each letter notified the tribe of the proposed project, described the project components, and summarized the investigations being conducted to identify cultural resources within the project APE. Maps of the project location and APE were included. Each letter invited the tribe to participate in consultation for the proposed project . Follow-up phone calls were made to each tribal contact upon confirmation of receipt of the letter. No response was received from 17 of the 19 contacted tribes. The two responses received were from the Viejas Band of Kumeyaay Indians and the Gabrieleno Band of Mission Indians – Kizh Nation.

Viejas Band of Kumeyaay Indians

Ray Teran, Resource Manager, in a letter dated March 21, 2018, stated that the project site has little cultural significance or ties to the Viejas but requested to be informed of any new developments such as inadvertent discoveries of cultural artifacts, cremation sites, or human

remains. Cheryl Sinopoli of Caltrans acknowledged receipt of the letter and the request to be informed of new discoveries by email on March 28, 2018.

Gabrieleno Band of Mission Indians - Kizh Nation

A letter dated April 4, 2018, was received from Andrew Salas, Tribal Chairman of the Gabrieleno Band of Mission Indians – Kizh Nation. The letter states that project is within a sensitive area and may cause a substantial adverse change in the significance of the Tribe's cultural resources; the Tribe requests consultation for the project. Cheryl Sinopoli of Caltrans replied to Chairman Salas by email on April 5, 2018, requesting a date and time to meet to discuss potential concerns. Ms. Sinopoli also provided a copy of the project description, the SLF and records search results, and project location maps.

On April 23, 2018, Chairman Salas responded regarding a different project. No comments about the SR 55 Improvements Project were provided. On April 27, 2018, Ms. Sinopoli attended a field meeting with Chairman Salas for a separate project. The SR 55 Improvements Project was briefly discussed. Chairman Salas indicated that the Lincoln Avenue and I-5/SR 22 locations had concerns for the Tribe and that he would check the Tribe's records regarding the Katella Avenue location. He also stated that he would provide additional information. On May 1, 2018, Ms. Sinopoli sent an email to Chairman Salas requesting the additional information mentioned during the field meeting and provided maps of the project APE.

On May 16, 2018, Chairman Salas sent an email to Ms. Sinopoli regarding a resource near the Yorba Cemetery. Ms. Sinopoli responded via email on June 13, 2018, to confirm that the Yorba Cemetery is 3.4 miles away from any proposed ground disturbance associated with the proposed project and that the potential to encounter buried resources within the APE was being assessed. Chairman Salas replied on June 13, 2018, and confirmed that the resource in question is adjacent to, but not within the Yorba Cemetery and confirmed that the resource is about 3 miles away from SR 55. Ms. Sinopoli replied on June 14, 2018, thanking Chairman Salas for the clarification.

On January 15, 2019, Ms. Sinopoli sent an email to Chairman Salas summarizing the results of the archaeological sensitivity analysis and review of as-built drawings. Ms. Sinopoli requested that Chairman Salas contact her if he had any comments or wanted to discuss the project further. No further response has been received from Chairman Salas to date.

Refer to Section 4.2.1 Native American Heritage Coordination, of this document, for further information on all coordination efforts with Native American representatives to date.

2.7.2.2 Results

While the records search showed that the APE and a 1-mile radius around it has been extensively studied by 171 previous investigations, the results of these investigations show that the two previously documented resources within the APE are historic-age built environment resources which include a 1914 Craftsman Bungalow residence that is no longer extant and the Old Town Tustin historic district. Based on the proposed project activities, it was ultimately determined that the Old Town Tustin historic district is immediately adjacent to the APE, but is not located within it. Of those 402 parcels located within the APE, five were evaluated for inclusion in the NRHP and the CRHR. Two were found eligible for listing in the NRHP. One was found not

eligible for listing in the NRHP and CRHR but is a locally designated resource and is considered a historical resource for the purposes of CEQA. None were found eligible for a designation as a CHL. These properties are not eligible for inclusion in the local historic district because they are located outside of the boundary established for the historic district and are physically separated by intervening modern infill construction and substantially altered historic buildings. Additionally, the properties have been adjacent to an existing freeway that was constructed more than 50 years ago. The remaining properties were exempt from review in accordance with Attachment 4 of the Section 106 PA.

The records search and field survey resulted in no discoveries of archaeological resources within the mostly paved APE. Unpaved surfaces comprised less than 1 percent of the overall APE and were primarily confined to unpaved slopes adjacent to freeway ramps connected to SR 55. In addition, only 5 of the 171 previous investigations conducted within 1 mile of the APE included archaeological monitoring. Three of these were negative for cultural resources. The other two monitoring projects, both located near the northern end of the APE, each identified three resources. One monitoring project identified three prehistoric isolated finds (one lithic tool and two milling stones), all of which were surface finds (HPSR; March 2019). The other monitoring project identified one prehistoric isolated find (a milling stone) on the surface and two historicage refuse scatters, one of unknown depth and one at a depth of 7 to 10 feet below grade (March 2019). In summary, the previous monitoring projects conducted in the vicinity of the APE, as identified through the records search, did not encounter any subsurface prehistoric materials and encountered only one subsurface historic-age deposit.

The APE is heavily disturbed and developed. The top 5 to 20 feet of sediments throughout the APE consists of fill material or heavily disturbed soils. Although some portions of the APE have a high sensitivity to contain either prehistoric or historic-age archaeological materials, that sensitivity applies only to undisturbed, non-fill sediments. The majority of ground disturbance for the project consists of roadway widening, which is not anticipated to exceed 5 feet below the ground surface and, therefore, will primarily occur in disturbed sediments or fill material. The lane addition at the southbound off- and on-ramps at Katella Avenue will also be limited to 5 feet below the ground surface and, therefore, will primarily occur in disturbed sediments or fill material. The lane addition at the southbound off- and on-ramps at Katella Avenue will also be limited to 5 feet below the ground surface and, therefore, will primarily occur in disturbed sediments or fill material. The lane addition at the southbound off- and on-ramps at Katella Avenue will also be limited to 5 feet below the ground surface and, therefore, will primarily occur in disturbed sediments or fill material. These ground-disturbing construction activities within disturbed sediments and fill material have low potential to encounter archaeological material.

The Santiago Creek, which traverses under SR 55 and is located within the APE, is mapped as having a high potential for prehistoric resources below 5 feet, and the central portion of the project area has a high sensitivity for historic-age resources below 5 feet (see Attachment F of the HPSR); however, no construction activities that will exceed a depth of 5 feet will occur in either of these areas. In addition, most of the construction activities in the northern portion of the APE, also mapped as having a high potential for prehistoric resources below a depth of 5 feet, will not exceed 5 feet. Therefore, the majority of construction activities have a low potential to encounter archaeological resources.

Some construction will include ground-disturbing activities that exceed 5 feet in depth and will occur within areas that have a high or moderate potential to contain buried archaeological deposits in undisturbed sediments. However, previous construction, as indicated in as-built drawings, has disturbed sediments to a depth of 10 to 20 feet in all of these areas. In addition, the subsurface sediments with high to moderate archaeological sensitivity are likely underlain at

greater depths by older sediments of Pleistocene, Pliocene, or Miocene age that have low archaeological sensitivity; and it is unlikely that buried archaeological deposits occur more than 10 to 15 feet below grade. In summary, the previous monitoring projects conducted in the vicinity of the APE, as identified through the records search, did not encounter any subsurface prehistoric materials and encountered only one subsurface historic-age deposit. Therefore, it is expected that all proposed excavations would occur either within sediments that have been previously disturbed from past highway improvement projects (i.e., within the top 10 to 20 feet below grade) or within deeper, older sediments of low archaeological sensitivity (i.e., deeper than 10 to 15 feet below grade). As a result, inadvertent impacts to intact, buried archaeological resources are not expected. In the unlikely event that previously unidentified cultural materials are unearthed during construction, it is Caltrans' policy that work be halted in that area until a qualified archaeologist can assess the significance of the find. Additional archaeological survey will be needed if project limits are extended beyond the present survey limits.

The HPSR was submitted to the SHPO on April 3, 2019. The SHPO responded on April 30, 2019, with concurrence on 730, 741, and 750 West First Street in Tustin, California, as not eligible for NRHP. The SHPO concurred that 14841 Yorba Street in Tustin is eligible for NRHP under Criterion C but did not comment on the property's eligibility under Criterion B at this time, due to insufficient contextual information. The SHPO also concurred that 14891 Yorba Street in Tustin is eligible for the NRHP under Criterion C but did not comment on the property's eligibility under comment on the property's eligibility under Criterion A at this time, due to insufficient contextual information.

2.7.3 Environmental Consequences

2.7.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

Although considered unlikely, the Build Alternative would require ground disturbance activities and modifications to the existing freeway corridor and associated ramps which could result in impacts to previously unknown cultural resources. Although construction activities are considered temporary and short-term, the direct impacts to cultural resources are considered permanent impacts. Section 2.7.3.2, Permanent Impacts, describes these impacts and includes Project Features to address potential impacts to cultural resources associated with ground disturbance activities during construction.

No Build Alternative

Under the No Build Alternative, none of the proposed improvements would be constructed. The No Build Alternative would maintain the existing conditions; therefore, the No Build Alternative would not result in temporary adverse impacts related to cultural resources as a result of construction activities.

2.7.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

No archaeological resources were identified within the APE as a result of the records search or field survey. The APE is heavily disturbed and developed and is situated primarily in an area of man-made fill material and alluvial deposits. Thus, ground-disturbing construction activities that extend below the layer of existing pavement and fill within the APE have low potential to
encounter archaeological material. However, the City of Orange has indicated that the central portion of the project alignment through the city has a moderate to high sensitivity for historicage archaeological resources associated with farmstead development from the 1870s to the 1920s. In addition, the City has stated that the two portions of the project alignment south of SR 91 and just north of SR 22 have a high potential for prehistoric archaeological resources.

The Build Alternative would require ground-disturbance activities and modifications to the existing freeway corridor and associated ramps which could result in direct impacts to previously unidentified cultural resources or human remains. If previously unidentified cultural materials are unearthed during construction, it is Caltrans' policy that work be halted in that area until a qualified archaeologist can assess the significance of the find. Additional surveys will be needed if project limits are extended beyond the present survey limits.

If human remains are discovered, California Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner shall be contacted. If the remains are thought by the Coroner to be Native American, the Coroner will notify the NAHC, who, pursuant to PRC Section 5097.98, will then notify the Most Likely Descendant (MLD). At this time, the person who discovered the remains will contact the Caltrans District 12 Environmental Branch Chief so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

Implementation of Project Features PF-CUL-1 and PF-CUL-2 would address potential impacts to cultural resources associated with ground disturbance activities during construction.

- **PF-CUL-1** If cultural materials are discovered during site preparation, grading, or excavation, the construction contractor will divert all earth-moving activity within and around the immediate discovery area until a qualified archaeologist can assess the nature and significance of the find. At that time, the Caltrans District 12 Environmental Branch Chief will be coordinated with to determine appropriate course of action.
- **PF-CUL-2** If human remains are discovered during site preparation, grading, or excavation, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains and the County Coroner shall be contacted. Pursuant to California Public Resources Code (PRC) Section 5097.98, if the remains are thought to be Native American, the Coroner will notify the Native American Heritage Commission, which will then notify the Most Likely Descendant (MLD). At that time, the Caltrans District 12 Environmental Branch Chief will be contacted so they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of California PRC 5097.98 are to be followed as applicable.

No archaeological resources were identified within the APE. Although two historic properties are located within the Indirect APE, the project would not result in a take or easement of these properties. Additionally, the properties have been adjacent to an existing freeway that was constructed more than 50 years ago. Therefore, no cultural resources are present within the APE that would trigger the requirements for protection under Section 4(f), and no further discussion of those types of resources is provided relative to the requirements of Section 4(f). The project

would not result in a direct or indirect effect to archaeological resources and historic properties, and a finding of No Historic Properties Affected is appropriate for the proposed project.

No Build Alternative

Under the No Build Alternative, none of the proposed improvements would be constructed. The No Build Alternative would maintain the existing conditions; therefore, the No Build Alternative would not result in permanent impacts related to cultural resources as a result of construction activities. No indirect or secondary impacts on cultural resources would result from implementation of the No Build Alternative.

2.7.4 Avoidance, Minimization, and/or Mitigation Measures

The project will incorporate the project features PF-CUL-1 and PF-CUL-2, as outlined above in Section 2.7.3, Environmental Consequences, to help avoid and/or minimize potential impacts to cultural resources. No additional avoidance, minimization, and/or mitigation measures other than the Standard Project Features are required.

PHYSICAL ENVIRONMENT

2.8 Hydrology and Floodplains

2.8.1 Regulatory Setting

EO 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The FHWA requirements for compliance are outlined in 23 CFR 650 Subpart A.

To comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments
- Risks of the action
- Impacts on natural and beneficial floodplain values
- Support of incompatible floodplain development
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project

The base floodplain is defined as "the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year." An encroachment is defined as "an action within the limits of the base floodplain."

2.8.2 Affected Environment

This section is based on the *Location Hydraulic Study State Route 55 Improvement Project From Interstate 5 to State Route 91* (LHS) (April 2018), the *Water Quality Technical Memorandum* (November 2018), *Stormwater Data Report* (March 2019), and the *Preliminary Drainage Report State Route 55 Widening Project* (October 2018) prepared for the proposed project.

2.8.2.1 Regional Hydrology

The proposed project is located within the Santa Ana River hydrologic unit and within two subhydrologic areas: the Lower Santa Ana River and San Diego Creek, both of which are part of the East Coastal Plain Hydrologic Sub-Area (801.11). In addition, the proposed project is located within three watersheds: the Lower Santa River Watershed, Santiago Creek Watershed, and San Diego Creek Watershed. Specifically, from Chapman Avenue north to SR 91, the project limits are located within the Lower Santa Ana River Watershed. From Chapman Avenue south to I-5, the project limits are located within the San Diego Creek Watershed, which is part of the Newport Bay Watershed.

The project corridor also falls within the Orange County Flood Control Lower Santa Ana River Watershed and San Diego Creek Watershed, as defined by Orange County Watersheds, a division of Orange County Public Works. According to Santa Ana Regional Water Quality Control Board (RWQCB) Basin Plan, the project crosses Santiago Creek Reach 1, which drains to the Santa Ana River Reach 2. Other than Santiago Creek, no natural drainage courses or streams are in the study area. Within the project area, Santiago Creek runs along a channelized course that ultimately drains into the Santa Ana River. While portions of Santiago Creek downstream of the project area have been concrete lined, the majority is earthen bottom, exhibiting many characteristics of the original natural channel including the presence of riparian vegetation. Figure 2.8-1 illustrates the delineated watershed of the Santiago Creek at the confluence with the Santa Ana River.



Figure 2.8-1. Santiago Creek Watershed

According to Federal Emergency Management (FEMA) Flood Insurance Rate Map (FIRM) Panel Number 06059C0162J (FEMA 2009), the project is located within a 100-year floodplain contained within a concrete channel (Zone AE, areas where base flood elevations are determined) associated with Santiago Creek where the Santiago Creek Bridge (Bridge No. 55-0033) crosses SR 55. In addition, the eastern side of the project area along the SR 55 between Santiago Creek and I-5 is designated as Zone X (areas of 0.2 percent annual chance flood, areas of 1.0 percent annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1 percent annual chance flood). No Orange County Flood Control District Facility is located within the project limits. The FEMA FIRM panels for the project area are included in Figure 2.8-2 through Figure 2.8-6. Figure 2.8-2. FEMA FIRM Panel: 06059C0277J



Figure 2.8-3. FEMA FIRM Panel: 06059C0164J



Figure 2.8-4. FEMA FIRM Panel: 06059C0162J



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Figure 2.8-5. FEMA FIRM Panel: 06059C0154J

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Figure 2.8-6. FEMA FIRM Panel: 06059C0152J

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2.8.2.2 Santiago Creek

The Santiago Creek drainage area is approximately 102 square miles and is the largest waterbody and only 100-year floodplain crossing SR 55 within the project limits. The Santiago Creek floodplain crosses the project area at Post Mile 13.42 through Santiago Creek Bridge (Bridge No. 55-0033).

Santiago Creek's beneficial uses include municipal and domestic water supply, groundwater recharge, wildlife and warm freshwater habitats, and non-contact water recreational uses. Santiago Creek is an intermittent stream, consisting of nuisance flows and groundwater seepage outside the rainy season. Generally, Santiago Creek contains little to no vegetation at the flowline to moderate vegetation along the banks. Low to moderate quality riparian habitat exists between Santiago Creek Bridge and East Chapman Avenue.

Santiago Creek is the main tributary to the Santa Ana River in Orange County. The headwater of the creek is in the vicinity of Santiago Peak of the Santa Ana Mountains in northeastern Orange County. Santiago Creek flows from the headwaters into the Irvine Lake and continues northwest for a distance of approximately 3.5 miles and then turns southwest for approximately 7.0 miles before joining the Santa Ana River in the city of Santa Ana just south of the Garden Grove Freeway (SR 22). Improvements to the Santiago Creek Channel have occurred primarily between Santiago Creek Recharge Basin and the Santa Ana River Confluence to prevent erosion and to protect surrounding residential neighborhoods (USACE 1988).

2.8.2.3 Natural and Beneficial Floodplain Values

Natural and beneficial floodplain values include, but are not limited to, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge. The proposed project has no impact on the floodplain or its natural and beneficial values.

2.8.3 Environmental Consequences

2.8.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

During construction of Build Alternative, construction activities would occur primarily within the right-of-way. The project construction activities would not reduce or otherwise affect the flood storage capacity and would not modify flood flows. Furthermore, construction activities would be limited to the dry season. Construction activities under the Build Alternative would not result in direct or indirect temporary adverse impacts related to hydrology and floodplains.

No Build Alternative

The No Build Alternative would not include the construction of any of the proposed project improvements. Therefore, the No Build Alternative would not result in direct or indirect temporary impacts to hydrology and floodplains in the project area.

2.8.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

The Build Alternative will add paved areas and realign the freeway ramps, some existing systems may have to be replaced to contain the required design flows within the project limits. Proposed improvements may require abandoning some drainage systems or adjusting some with respect to the finished grade. Others may conflict with proposed retaining walls and will be relocated. These direct impacts may be minimized or avoided by the following:

- Relocation, extension, and adjustment of systems as necessary
- Abandonment or removal of systems which are no longer serviceable

In general, existing drainage patterns will be maintained on the ramps and on the freeway. It is not expected that any major culvert and bridge widening improvements would be required for this project. The roadway widening may affect the number of required inlets. Detailed calculation to determine the spacing and number of inlets will be conducted during the Plans, Specifications, and Estimates (PS&E) phase. The roadway widening will also require relocation of existing inlets to the new edge of pavement. If feasible, storm drain laterals shall be protected in place to prevent unnecessary pavement cuts. Capping the existing inlets can be an alternative to complete removal and/or reconstruction. Visual inspection of these storm drain systems shall be conducted to assess their effectiveness. During the PS&E phase, detailed pavement hydrology and hydraulic analysis will be completed to calculate flows and size the on-site drainage facilities in conformance with Caltrans design criteria.

The areas affected by the SR 55 improvement project include sections of SR 55 in the City of Orange. Within the study limits, an unlined reach of the Santiago Creek crosses underneath SR 55 as State Highway Bridge Number 55-0033 at Post Mile 13.42. According to the FIRM panels 06059C0162J (Figure 2.8-4) and 06059C0164J (Figure 2.8-3) (FEMA 2009), the base Flood Hazard Zone of the proposed reach of the Santiago Creek adjacent to the SR 55 is designated as Zone AE. The FEMA FIRM confirms that the 1-percent annual chance (also known as the 100-year event) floodplain is contained within the creek channel at the project area. No encroachments of the Santiago Creek floodplain are expected within the limits of the proposed project.

The 100-year floodplain associated with Santiago Creek within the project area is contained within the creek channel. The project is not anticipated to encroach upon any 100-year floodplains, including the Santiago Creek floodplain. No natural and beneficial floodplain values are present. No restoration or preservation measures are required. No increases in base flood elevations in reserved areas of the floodplain (floodway) would occur. The project does not support incompatible floodplain development. No horizontal or longitudinal encroachments are within the Santiago Creek floodplain as a result of the project. The project has no potential to result in a significant floodplain encroachment pursuant to 23 CFR 650 Subpart A.

The proposed project has no direct impact on Santiago Creek and does not introduce additional risk for traffic disruptions or loss of life and property. Indirect or secondary impacts are not anticipated to occur.

No Build Alternative

The No Build Alternative would not result in the construction and operation of the improvements in the Build Alternative and, therefore, would not result in adverse permanent impacts to hydrology and floodplains in the proposed project area. No indirect or secondary impacts on hydrology and floodplains would result from implementation of the No Build Alternative.

2.8.4 Avoidance, Minimization, and/or Mitigation Measures

The project would not result in adverse impacts related to floodplains and hydrology. No avoidance, minimization, and/or mitigation measures have been identified.

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2.9 Water Quality and Stormwater Runoff

2.9.1 Regulatory Setting

2.9.1.1 Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States from any point source¹ unlawful unless the discharge is in compliance with a NPDES permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of stormwater from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the United States. RWQCBs administer this permitting program in California. Section 402(p) requires permits for discharges of stormwater from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by the USACE.

The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of the USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with the U.S. Environmental Protection Agency's (U.S. EPA) Section 404 (b)(1) Guidelines (40 CFR Part 230), and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE and allow the discharge of dredged or fill material into the aquatic system (waters of the United States) only if there is no practicable alternative

¹ A point source is any discrete conveyance such as a pipe or a man-made ditch.

which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge would have lesser effects on waters of the United States and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent² standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the United States. In addition, every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in Section 2.16, Wetlands and Other Waters.

2.9.1.2 State Requirements

Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the State. Waters of the State include more than just waters of the United States, like groundwater and surface waters not considered waters of the United States. Additionally, it prohibits discharges of "waste" as defined, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect those uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

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The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for

² The U.S. EPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall."

protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollutant Discharge Elimination System Program

Municipal Separate Storm Sewer Systems

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of stormwater discharges, including MS4s. An MS4 is defined as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that is designed or used for collecting or conveying storm water." The SWRCB has identified the Department as an owner/operator of an MS4 under federal regulations. The Department's MS4 permit covers all Department rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

The Department's MS4 Permit, Order No. 2012-0011-DWQ (adopted on September 19, 2012, and effective on July 1, 2013), as amended by Order No. 2014-0006-EXEC (effective January 17, 2014), Order No. 2014-0077-DWQ (effective May 20, 2014) and Order No. 2015-0036-EXEC (conformed and effective April 7, 2015) has three basic requirements:

- 1. The Department must comply with the requirements of the Construction General Permit (see below).
- 2. The Department must implement a year-round program in all parts of the state to effectively control stormwater and non-stormwater discharges.
- 3. The Department stormwater discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices (BMPs), to the maximum extent practicable, and other measures as the SWRCB determines to be necessary to meet the water quality standards.

To comply with the permit, the Department developed the Statewide Storm Water Management Plan (SWMP) to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within the Department for implementing stormwater management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices the Department uses to reduce pollutants in stormwater and non-stormwater discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The proposed project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address stormwater runoff.

Construction General Permit

Construction General Permit, Order No. 2009-0009-DWQ (adopted on September 2, 2009, and effective on July 1, 2010), as amended by Order No. 2010-0014-DWQ (effective February 14,

2011) and Order No. 2012-0006-DWQ (effective on July 17, 2012). The permit regulates stormwater discharges from construction sites that result in a Disturbed Soil Area (DSA) of 1.0 acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all stormwater discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least 1.0 acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than 1.0 acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop Storm Water Pollution Prevention Plans (SWPPPs); to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory stormwater runoff pH and turbidity monitoring and, before construction and after construction, aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective SWPPP. In accordance with the Department's SWMP and Standard Specifications, a Water Pollution Control Program (WPCP) is necessary for projects with DSA less than 1.0 acre.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by the USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location and are required before the USACE issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as WDRs under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

2.9.2 Affected Environment

This section is based on the Water Quality Technical Memorandum (WQTM) (November 2018), Location Hydraulic Study (LHS) (April 2018), and the Preliminary Drainage Report (October 2018) prepared for the proposed project.

2.9.2.1 Surface Waters

The proposed project is located within the Santa Ana River hydrologic unit, and within two subhydrologic areas: the Lower Santa Ana River and San Diego Creek, both which are part of the East Coastal Plain Hydrologic Sub-Area (801.11). In addition, the proposed project is located

within three watersheds: the Lower Santa River Watershed, Santiago Creek Watershed, and San Diego Creek Watershed. Specifically, from Chapman Avenue north to SR 91, the project limits are located within the Lower Santa Ana River Watershed. From Chapman Avenue south to I-5, the project limits are located within the San Diego Creek Watershed, which is part of the Newport Bay Watershed.

The project corridor also falls within the Orange County Flood Control Lower Santa Ana River Watershed and San Diego Creek Watershed, as defined by Orange County Watersheds, a division of Orange County Public Works. According to the Santa Ana RWQCB Basin Plan, the project crosses Santiago Creek Reach 1, which drains to the Santa Ana River Reach 2. Other than Santiago Creek, no natural drainage courses or streams are in the study area. Within the project area, Santiago Creek runs along a channelized course and ultimately drains into the Santa Ana River. While portions of Santiago Creek downstream of the project area have been concrete lined, the majority is earthen bottom, exhibiting many characteristics of the original natural channel including the presence of riparian vegetation.

The existing on-site local drainage system consists of inlets, ditches, and storm drain systems to capture and convey storm runoff away from the roadway. Roadway embankment runoff is typically collected by on-site ditches or channels. Other on-site facilities include median inlets. In a few cases, freeway runoff sheet flows to an adjacent street and is collected in the existing catch basin inlets in the street.

The major project widening improvements are located between south of SR 22 interchange and First Street. An existing pump station is located near First Street undercrossing. An existing drainage system is parallel to the east side of SR 55 near Fairhaven Avenue to approximately I-5. This drainage system consists of a 24-inch-diameter reinforced concrete pipe (RCP), 36-inch-diameter RCP, and 42-inch-diameter RCP at the upstream crossing of 17th Street via a 4-foot-high by 2.5-foot-high reinforced concrete box (RCB) turning into a concrete trapezoidal channel, 4-foot-high by 2.5-foot-high RCB, a small segment of air-blown motor (ABM) channel, 48-inch-diameter RCP, and 4-foot-high by 3-foot-high RCB and then draining into the discharge box of the pump station. After the pump station discharge box, this drainage system continues as a 60-inch-diameter RCP, double (Dbl) 4-foot-high by 3-foot-high RCB, Dbl 6-foot-high by 2-foot-high RCB, 8-foot-high by 4-foot-high RCB, and 10-foot-high by 4-foot-high RCB. This drainage system drains to Santa Ana/Santa Fe Channel (Orange County Facility F10) which crosses SR 55 between the Edinger Avenue and McFadden Avenue interchanges and eventually drains to San Diego Creek Reach 1. San Diego Creek drains into the Upper Newport Bay and ultimately to the Pacific Ocean.

Table 2.9-1 shows the beneficial uses designated in the Santa Ana RWQCB Basin Plan for Santiago Creek Reach 1, San Diego Creek Reach 1 and Upper Newport Bay. Based on the *Final* 2014/2016 California Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) approved by the SWRCB and U.S. EPA, Santiago Creek Reach 1 is not listed on the 303(d) list for TMDL requirements. San Diego Creek Reach 1 and Upper Newport Bay have TMDL requirements for Dichlorodiphenyltrichloroethane (DDT).

Beneficial Uses	Santiago Creek Reach 1	San Diego Creek Reach 1	Upper Newport Bay
GWR	Х		
WILD	Х	Х	Х
MUN	Х		
REC1	Х	Х	Х
REC2	Х	Х	Х
WARM	Х	Х	
COMM			Х
BIOL			Х
RARE			Х
SPWN			Х
MAR			Х
SHEL			Х
EST			Х

Table 2.9-1: Beneficial	Uses c	of Local	Surface	Waters
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Definitions of Beneficial Uses:

Groundwater Recharge (GWR): waters are used for natural or artificial recharge of groundwater for purposes that may include, but are not limited to, future extraction, maintaining water quality or halting saltwater intrusion into freshwater aquifers.

Wildlife Habitat (WILD): waters support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.

Municipal and Domestic Supply (MÚN): waters are used for community, military, municipal or individual water supply systems. These uses may include, but are not limited to, drinking water supply.

Water Contact Recreation (REC1: Primary Contact Recreation): waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing and use of natural hot springs. Access prohibited in all or part per agency with jurisdiction.

Non-contact Water Recreation (REC2: Secondary Contact Recreation): waters are used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing and aesthetic enjoyment in conjunction with the above activities.

Warm Freshwater Habitat (WARM): waters support warmwater ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish and wildlife, including invertebrates.

Commercial and Sportfishing (COMM): water used for commercial or recreational collection of fish or other organisms, including those collected for bait. These uses may include, but are not limited, to uses involving organisms intended for human consumption. **Preservation of Biological Habitats of Special Significance (BIOL):** waters support designated areas or habitats, including, but not limited to, established refuges, parks, sanctuaries, ecological reserves or preserves, and Areas of Special Biological Significance (ASBS), where the preservation and enhancement of natural resources requires special protection.

Rare, Threatened or Endangered Species (RARE): waters support the habitats necessary for the survival and successful maintenance of plant or animal species designated under state or federal law as rare, threatened or endangered.

Spawning, Reproduction and Development (SPWN): waters support high quality aquatic habitats necessary for reproduction and early development of fish and wildlife.

Marine Habitat (MAR): waters support marine ecosystems that include, but are not limited to, preservation and Enhancement of marine habitats, vegetation, fish and shellfish and wildlife.

Shellfish harvesting (SHEL): waters

support habitats necessary for shellfish collected for human consumption, commercial or sport purposes.

Estuarine Habitat (EST): water supports estuarine ecosystems, which may include, but are not limited to, preservation and enhancement of estuarine habitats, vegetation, fish, and shellfish, and wildlife such as waterfowl, shorebirds, and marine mammals.

2.9.2.2 Groundwater

The project site is within the Orange County Groundwater Basin, which is located in the area designated by the California Department of Water Resources as Basin 8-1, the "Coastal Plain of Orange County Groundwater Basin" in Bulletin 118 (November 2018). The surface area of the groundwater basin is 224,000 acres (350 miles). The basin recharges from percolation of the Santa Ana River flow, infiltration of precipitation, and injection into wells. Groundwater

impairments include sea water intrusion near the coast, colored water from natural organic materials in the lower aquifer system, nitrates and methyl tertiary-butyl ether (MTBE) (November 2018).

According to the Orange County Water District (OCWD), groundwater elevation contours for the principal aquifer, the high groundwater table along the alignment is generally 40 to 100 feet below the existing grade, except near the Santiago Creek drainage between SR 22 and Chapman Avenue. In this segment, the groundwater table is expected to range from 20 to 30 feet below the existing grade (November 2018).

2.9.3 Environmental Consequences

2.9.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

The total DSA for the project is estimated to be 15.65 acres and includes areas for construction, access, and staging. Potential temporary impacts to water quality that can be anticipated during construction for the Build Alternative include sediments caused by the temporary access of construction equipment, excavation and grading for the widening of the roadway, vegetation removal, concrete waste from the construction of new retaining walls, trash from workers and construction waste, petroleum products from construction equipment and/or vehicles, sanitary wastes from portable toilets, and any other chemicals used for construction such as coolants used for equipment and/or concrete curing compounds.

Since the project causes a DSA greater than 1.0 acre, the project would need to comply with the NPDES Construction General Permit. The Build Alternative would be required to prepare and implement a SWPPP. The SWPPP would identify temporary BMPs to address the potential temporary impacts to water quality. The temporary BMPs identified in the project SWPPP may include, but not be limited to, measures such as temporary slope reinforcement and stabilization measures (e.g., hydraulic mulch [bonded fiber mix], temporary cover), linear sediment barriers (e.g., fiber rolls, gravel bag berms, silt fencing), construction site waste management (e.g., street sweeping, concrete washout), as well as temporary construction entrance and drainage inlet protection.

Modification of the six drainages would require permits from the Santa Ana RWQCB for a 401 Water Quality Certification, USACE for a Section 404 Permit, and California Department of Fish and Wildlife (CDFW) for a 1602 Streambed Alteration Agreement. Should the project need to divert stream flows around the construction area, the project will comply with the Santa Ana RWQCB De Minimus Permit for construction site dewatering and/or stream diversions (Order No. R8-2015-0004, NPDES No. CAG998001).

The groundwater table along the alignment is generally 40 to 100 feet below the existing grade except near the Santiago Creek drainage between SR 22 and Chapman Avenue. In this segment, the groundwater table is expected to range from 20 to 30 feet below the existing grade. Due to the historically high groundwater table, groundwater is not expected to adversely affect construction of the proposed project, and dewatering activities are not anticipated. However, fluctuations of the groundwater level, localized zones of perched water, and an increase in soil moisture should be anticipated during and following the rainy seasons in the area (October 1 through May 1) or periods of locally intense rainfall or stormwater runoff.

The following Project Features have been identified to minimize impacts to water resources and water quality during construction.

- **PF-WQ-1** The project would comply with the provisions of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) (Order No. 2009-0009-DWQ, NPDES No. CAS000002), as amended by Order No. 2010-0014-DWQ and Order No. 2012-0006-DWQ.
- PF-WQ-2 The project would comply with the National Pollutant Discharge Elimination System (NPDES) Construction General Permit by preparing and implementing a Storm Water Pollution Prevention Plan (SWPPP) to address all constructionrelated activities, equipment, and materials that have the potential to impact water quality. The SWPPP will identify the sources of pollutants that may affect the quality of stormwater and include Best Management Practices (BMPs) to control the pollutants, such as sediment control, storm drain inlet protection, construction materials management and non-stormwater BMPs. All work must conform to the Construction Site Best Management Practice Requirements specified in the latest edition of the Storm Water Quality Handbooks: Construction Site Best Management Practices Manual (Caltrans 2017d) to control and minimize impacts of construction and construction-related activities, materials, and pollutants on the watershed. These include, but are not limited to, temporary sediment control, temporary soil stabilization, scheduling, waste management, materials handling, and other non-stormwater BMPs.

With implementation of required permits and Project Features PF-WQ-1 and PF-WQ-2, the Build Alternative would not result in adverse direct or indirect impacts related to water quality and stormwater runoff during construction.

No Build Alternative

The No Build Alternative would not include the construction any of the proposed project improvements and, therefore, would not directly or indirectly result in adverse temporary impacts to water quality and stormwater runoff in the study area.

2.9.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

Under the Build Alternative, the proposed project would increase the impervious surface by 2.90 acres to accommodate project improvements, including proposed roadway surfaces, sidewalks, and pedestrian ramps. The additional impervious surface areas have the potential to increase typical pollutants generated during the operation of a transportation facility (sediment/turbidity, nutrients, trash, and debris, bacteria and viruses, oxygen-demanding substances, organic compounds, oil and grease, pesticides, and metals).

Within the project area, Santiago Creek contains a natural bottom and wetlands as well as nonwetlands. Santiago Creek is fed by ephemeral drainages that convey water during rain events. No work would be located within or adjacent to Santiago Creek. The nearest project improvements to Santiago Creek are approximately 1.0 mile south near the eastbound SR 22 to northbound SR 55 connector and approximately 3.0 miles north at Katella Avenue SR 55 southbound on-ramp.

Under the Build Alternative, the project would include roadway widening, additional paved areas, new sidewalks, realignment of freeway ramps, and construction of retaining walls. These project improvements would relocate five jurisdictional, concrete-lined drainages to continue to maintain flows. Table 2.9-2 shows impact type and proposed design for concrete ditch/channels.

Impacted Project Drainage Features	Size and Type of Facility	Impact Type	Estimated USACE and RWQCB Impact (acres/linear feet)	Proposed Design
SB 55 Lincoln Ave off-ramp	concrete trapezoidal channel	Remove and relocate channel or pipe	0.03/549	To be replaced with 48-inch AP due to ROW constrains
SB 55 Katella Ave off-ramp	concrete V- Ditch	Remove and relocate channel or pipe	0.01/462	Southern portion to be relocated east due to widening and northern portion to be replaced with 24-inch AP
SB 55 17th St on- ramp	Concrete trapezoidal channel	Remove and relocate channel or pipe	0.01/282	To be relocated further west due to the new SB SR 55 off- ramp to Lincoln Ave
SB 55	ABM channel	Remove and relocate channel or pipe	0.01/246	To be replaced with 30-inch AP due to widening
SB 55 4th St off-ramp	ABM channel	Remove and relocate channel or pipe	0.02/410	To be replaced with 33-inch AP due to widening

Table 2.9-2: Impact Type and Proposed Design for Concrete Ditch/Channels

Source: HDR 2018

ABM: air-blown motor; AP: alternative pipe, which may include the use of reinforced concrete pipe (RCP), corrugated steel pipe (CSP), or some other pipe material that meets the design criteria; Ave: Avenue; NB: Northbound; ROW: right-of-way; RWQCB: Regional Water Quality Control Board; SB: Southbound; SR: State Route; St: Street; USACE: U.S. Army Corps of Engineers

In general, existing drainage patterns will be maintained on the ramps and on the freeway. No major culvert and bridge widening improvements are expected or would be required for this project. The roadway widening may affect the number of required inlets. Detailed calculation to determine the spacing and number of inlets will be conducted during the PS&E phase. The roadway widening will also require relocation of existing inlets to the new edge of pavement. If feasible, storm drain laterals shall be protected in place to prevent unnecessary pavement cuts. Capping the existing inlets can be an alternative to complete removal and/or reconstruction. Visual inspection of these storm drain systems shall be conducted to assess their effectiveness. During the PS&E phase, detailed pavement hydrology and hydraulic analysis shall be completed to calculate flows and size the on-site drainage facilities in conformance with Caltrans design criteria.

The project would implement post-construction source control BMPs (Design Pollution Prevention BMPs), such as preservation of existing vegetation and slope/surface protection systems (permanent soil stabilization), as well as concentrated flow conveyance systems such as concrete roadside ditches, oversize drains, inlets, flared end sections at storm drain outlets, and outlet protection. These Design Pollution Prevention BMPs would help control runoff and prevent soil erosion and sedimentation caused by concentrated flows of runoff. The project would also include treatment BMPs for stormwater runoff within Caltrans right-ofway, which may include biostrips, biofiltration swales, and infiltration basins. The treatment BMPs would include maintenance accessibility through the implementation of maintenance vehicle pullouts at each location. Two biofiltration strips are proposed within the SR 55/SR 22 connectors between southbound SR 55 mainline and SR 55 on-ramp and off-ramp.

Roadway widening within the project limits would increase flow contributing to the existing pump station located near First Street. To minimize the need to modify the pump station, two unlined infiltration basins are proposed to attenuate the flow going to the pump station. The project proposes two unlined infiltration basins south of 17th Street between the southbound SR 55 mainline and the SR 55 on-ramp, and south of 17th Street between the northbound SR 55 mainline and the SR 55 off-ramp. If the infiltration basin is determined to be infeasible after the geotechnical investigation in the PS&E phase, a detention basin with a liner could be considered as an alternative.

The post-construction treatment area for the project is estimated to be 12.98 acres. The postconstruction treatment areas will be designed per the Water Quality Flow (WQF) or Water Quality Volume (WQV), based on the BMP selected, to accommodate the more frequent design storms (two-year event). At that time, the treatment BMPs will be evaluated to determine if they meet the requirements for post-construction stormwater treatment controls under the Caltrans Statewide NPDES Storm Water Permit (Order No. 2012-0011-DWQ).

The following Project Features have been identified to minimize impacts to water resources and water quality during post-construction.

- **PF-WQ-3** Design Pollution Prevention Best Management Practices (BMPs) would be implemented such as preservation of existing vegetation and slope/surface protection systems (permanent soil stabilization), as well as concentrated flow conveyance systems such as roadside concrete ditches, oversized drains, inlets, flared end sections at storm drain outlets, and outlet protection.
- PF-WQ-4 Caltrans-approved treatment Best Management Practices (BMPs) would be implemented consistent with the requirements of the National Pollutant Discharge Elimination System (NPDES) Statewide Storm Water Permit Waste Discharge Requirements for the State of California, Department of Transportation (Caltrans) (Order No. 2012-0011-DWQ, NPDES No. CAS00003, adopted on September 19, 2012, and effective on July 1, 2013), as amended by Order No. 2014-0006-EXEC (effective January 17, 2014), Order No. 2014-0077-DWQ (effective May 20, 2014) and Order No. 2015-0036-EXEC (effective April 7, 2015). Treatment BMPs may include biostrips, biofiltration swales, and infiltration basins.

With implementation of the required permits and Project Features PF-WQ-3 and PF-WQ-4, the Build Alternative would not result in adverse direct impacts related to water quality and stormwater runoff during post-construction. Indirect or secondary impacts are not anticipated to occur under the Build Alternative.

No Build Alternative

The No Build Alternative would not include the operation of any of the proposed project improvements and, therefore, would not directly result in adverse permanent impacts to water quality and stormwater runoff in the study area. No indirect or secondary impacts on water quality and stormwater runoff would result from implementation of the No Build Alternative.

2.9.4 Avoidance, Minimization, and/or Mitigation Measures

The project will incorporate the Project Features PF-WQ-1 through PF-WQ-4, outlined above in Section 2.9.3, Environmental Consequences, to help avoid and/or minimize potential impacts. No additional avoidance, minimization, and/or mitigation measures other than the Standard Project Features are required.

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2.10 Geology/Soils/Seismology/Topography

2.10.1 Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under CEQA.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Structures are designed using the Department's Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see the Department's Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

2.10.2 Affected Environment

This section discusses the existing geologic and soils conditions within the project Study Area and provides an analysis of the potential impacts of the proposed project that are related to geology and soils. This section also addresses the potential for structural damage to project facilities due to the local geology underlying the project site, as well as slope stability, ground settlement, soils, grading, and seismic conditions. This section summarizes information provided in the Revised District Preliminary Geotechnical Report (Caltrans 2018b).

2.10.2.1 Local Geology, Topography, and Soils

The SR 55 project site is located in the southeastern edge of the Los Angeles Basin, just west of the Santa Ana Mountains. The Los Angeles Basin is a deep structural basin or trough which has been filled with a thick sequence of Tertiary and Quaternary-age (2 million years old and younger) marine and non-marine sediments. The upper, near-surface section of these sediments consists of stream-laid deposits that have been shed from the San Bernardino Mountains to the north and the nearby Santa Ana Mountains. These alluvial deposits overlie bedrock of the Fernando Formation.

The project alignment slopes gently downward toward the south, with elevations ranging from approximately 320 feet at the north end to 130 feet at the south end. Stormwater runoff in the area is collected into drainage devices that include the Newport Storm Drain and Buckeye Channel located on the east side of SR 55 near Meats Avenue, and the Santiago Creek, which transects the SR 55 between Chapman Avenue and La Veta Avenue in the City of Orange.

Geologic units underlying the project alignment underlain by old alluvial fan deposits and young alluvial fan deposits consisting generally of sand and silty sand with gravel, with scattered layers of silt and clay. Bedrock-like materials are exposed at the northerly end of the alignment. These sedimentary rocks consist of the Pliocene-age upper and lower members of the Fernando

Formation. The upper member consists of silty fine sandstone interbedded with siltstone. The lower member consists predominantly of siltstone.

Based on the as-built Log of Test Borings (LOTB), the near-subsurface soils along the project alignment consist mainly of sand, silty sand, and sandy silt from Main Street to Fairhaven Avenue and at Katella Avenue. The near-subsurface soils at Lincoln Avenue consist mainly of silty clay and sand with silt and gravel. Based on the available borings, the project site is underlain by man-made fill and alluvial deposits. The artificial fill is associated with construction of the freeway and expected to be relatively thin (5 feet or less) except at the interchanges where the embankment fill is generally up to 20 feet thick. Alluvial deposits underlying the fill are anticipated to consist of interbedded layers of sand, silty sand, silt, and clay.

The site is occupied by roadways in a well-developed area surrounded by mostly residential developments. Man-made features of engineering and construction significance include First Street overcrossing, 4th Street overcrossing, 17th Street overcrossing, Santa Clara overcrossing, Fairhaven Avenue overcrossing, Katella Avenue undercrossing, and Lincoln Avenue undercrossing. There are also existing retaining walls between 4th Street and 17th Street and soundwalls between 17th Street and Fairhaven Avenue and at the southbound SR 55 Katella Avenue on- and off-ramps. In addition, slopes associated with the interchanges exist at inclinations generally ranging from 1.5:1 to 2:1 (horizontal to vertical).

No natural features of geotechnical significance exist within the project limits.

2.10.2.2 Geologic Hazards

Geological hazards relevant to the SR 55 project segment include seismic ground shaking, localized soil liquefaction, and seismic settlement. The following irrelevant geologic hazards for the SR 55 project segment are identified; however, they are not discussed further in this section:

Tsunami and Seiches

Seiches are large waves generated in enclosed bodies of waters, such as lakes, in response to ground shaking. Tsunamis are waves generated in large bodies of water as a result of fault displacement or major ground movement. No enclosed bodies of water are near the project site, and the Pacific Ocean is approximately 10.5 miles west of the southern terminus of the SR 55 project. As a result, potential risks to SR 55 related to tsunamis and seiches are negligible.

Seismically Induced Landslides/Rock Falls

The site is not located in an area susceptible the landslides and/or rock fall. Man-made slopes and existing embankments within the project limits were observed to be in good condition and appear to have performed satisfactorily. No signs of erosion or slope instability were noted. Existing embankments within the project limits were also observed to be in good condition, with no signs of excessive settlement.

2.10.2.3 Faulting and Seismicity

No known active or potentially active faults have been mapped at the site, and the site is not located within an Alquist-Priolo Earthquake Fault Zone (Bryant and Hart 2007). The principal seismic hazard that could affect the site is ground shaking resulting from an earthquake occurring

along one of several major active or potentially active faults in southern California. Major regional faults with surface expression in proximity to the site are shown on Figure 2.10-1, Regional Fault Map. A seismic analysis for the site following Caltrans Seismic Design Criteria (2013a) and Geotechnical Services Design Manual (Caltrans 2012a and corresponding updates of December 2016). Distance of faults to the site along with the peak ground acceleration for each fault was estimated using the internet-based online tool by Caltrans (ARS Online, V.2.3.09; Caltrans 2017c). The estimated peak ground accelerations caused by three faults nearest to the site are summarized in Table 2.10-1.

Fault	Maximum Magnitude	Fault Type	Distance, km (miles)	Peak Ground Acceleration			
Northerly Segment (33.8349, -117.8358) Vs ₃₀ = 360 m/s (1,180 feet/s)							
Peralta Hills	6.1	Reverse	0.04 (0.03)	0.56g			
Puente Hills (Coyote Hills)	6.8	Reverse	8.0 (5.0)	0.40g			
Yorba Linda (Seismicity)	6.4	Reverse	4.6 (2.9)	0.39g			
Southerly Segment (33.7597, -117.8311) Vs ₃₀ = 300 m/s (985 feet/s)							
San Joaquin Hills	7.0	Reverse	8.1 (5.0)	0.39g			
Compton	6.9	Reverse	16.6 (10.3)	0.30g			
Elsinore (Glen Ivy)	7.7	Strike Slip	19.4 (12.1)	0.23g			

 Table 2.10-1: Deterministic Peak Ground Acceleration

A probabilistic seismic analysis using Caltrans ARS online program and the U.S. Geological Survey (USGS) deaggregation online program were also performed. The peak ground acceleration for a return period of 975 years was calculated to be 0.53 gravity (g) and 0.50g for the northerly and southerly segment of the alignment, respectively, with a deaggregated moment magnitude (Mw) of 6.9.

2.10.2.4 Groundwater

Groundwater was not encountered in the as-built borings drilled for the original construction and subsequent widening of the interchanges along the project alignment except at First Street. At this location, groundwater was encountered at a depth of 70 feet below existing grade (elevation 74 feet) in the borings drilled in 1989 for the First Street Overcrossing Replacement project.

The historically high groundwater level for this area, according to the California Geologic Survey (CGS 2001, Plate 1.2), is on the order of 20 to 40 feet below the ground surface. As such, groundwater is not expected to adversely affect construction for the proposed project. Fluctuations of the groundwater level, localized zones of perched water, and an increase in soil moisture should be anticipated during and following the rainy seasons or periods of locally intense rainfall or stormwater runoff.



Figure 2.10-1. Regional Fault Map

2.10.2.5 Liquefaction Potential and Seismic Settlement

Liquefaction is the loss of soil strength or stiffness due to a buildup of pore-water pressure during ground shaking. Liquefaction is associated primarily with loose (low density), saturated, fine- to medium-grained, cohesionless soils. Effects of liquefaction can include sand boils, excessive settlement, bearing capacity failures, and lateral spreading. The segment from SR 55/SR 22 interchange to Chapman Avenue is located within an area designated as potentially liquefiable on the California Seismic Hazard Zone Map (CGS 1998), as shown on Figure 2.10-2, Seismic Hazard Map. However, the proposed improvements for the Build Alternative are not located within this segment of SR 55. Shallow groundwater was not encountered in the as-built borings drilled for the original construction and subsequent widening of the interchanges along the project alignment. Additionally, sandy layers encountered in the borings drilled at the site were generally medium dense to dense. As such, based on the available information, liquefaction potential is not a design consideration for the project.

Seismically induced settlement consists of dry dynamic settlement (above groundwater) and liquefaction-induced settlement (below groundwater). This settlement occurs primarily within loose to moderately dense sandy soil due to reduction in volume during and shortly after an earthquake event. Based on the LOTB, sandy layers encountered in the borings drilled at the site were medium dense to dense. The seismically induced settlement is anticipated to be on the order of 1.0 inch.

2.10.2.6 Contaminated Soils

As described in detail in Section 2.12, Hazardous Waste/Materials, aerially deposited lead (ADL) is generally encountered in unpaved areas (or formerly unpaved areas) adjacent to older roads, primarily as a result of lead deposition from historical vehicle emissions. Because the SR 55 alignment has been used during periods when leaded gasoline was still in use, the adjacent unpaved surficial soils may contain ADL.

2.10.3 Environmental Consequences

2.10.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

Soil Erosion: Construction of the Build Alternative would temporarily disturb soil outside the project footprint but within the freeway rights-of-way, around work areas, heavy equipment traffic areas, and material laydown areas. Construction activities at the TCEs outside the freeway right-of-way would also temporarily disturb soils. Excavated soil in the construction areas would be exposed; and, as a result, there would be an increased potential for soil erosion during construction compared to existing conditions. During a storm event, soil erosion could occur at an accelerated rate.





During all construction activities for the Build Alternative, the construction contractor will be required to adhere to the requirements of the General Construction Permit and to implement erosion and sediment control BMPs specifically identified in the project SWPPP to keep sediment from moving off site into receiving waters and impacting water quality. Refer to Section 2.9, Water Quality and Stormwater Runoff, for additional discussion regarding construction-related water quality issues and mitigation, including BMPs.

Ground Motion: Construction activities could be affected by ground motion from seismic activities. Possible ground rupture, liquefaction, and slumping or slope failure could occur in areas with artificial fill if an earthquake were to occur during construction. Implementation of safe construction practices and compliance with Caltrans and the California Division of Occupational Safety and Health (Cal-OSHA) safety requirements would minimize the impacts to worker safety during construction activities.

Hazardous Waste: Disturbance of unpaved areas adjacent to the SR 55 mainline and ramps and the arterial streets within the project disturbance footprint could disturb ADL in the soils. Refer to Section 2.12, Hazardous Waste/Materials, for discussion of the potential effects associated with disturbance of soils containing ADL during construction of the Build Alternative and the project features addressing those potential effects.

No Build Alternative

Under the No Build Alternative, the temporary construction-related impacts discussed above for the Build Alternative would not occur because construction of project improvements on SR 55 would not occur under this alternative.

2.10.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

Local Geology, Topography, and Soils: The Build Alternative would not result in permanent substantive changes to the topography in the project area because the improvements would generally be constructed at or close to the same grade as the existing facility.

As discussed in Section 2.10.2.5, Liquefaction Potential and Seismic Settlement, shallow groundwater was not encountered in the as-built borings drilled for the original construction and subsequent widening of the interchanges along the project alignment. Additionally, sandy layers encountered in the borings drilled at the site were generally medium dense to dense. As such, based on the available information, liquefaction potential is not a design consideration for the project.

Seismically induced settlement consists of dry dynamic settlement (above groundwater) and liquefaction-induced settlement (below groundwater). This settlement occurs primarily within loose to moderately dense sandy soil due to reduction in volume during and shortly after an earthquake event. Based on the LOTB, sandy layers encountered in the borings drilled at the site were medium dense to dense. The seismically induced settlement is anticipated to be on the order of 1.0 inch. Design and construction of the proposed improvements would adhere to the Caltrans HDM (Caltrans 2016d) and other required standards, and recommendations from the Structure Foundation Report (March 2018) and the Geotechnical Design Report (May 2018), as included in Project Feature PF-GEO-1.

PF-GEO-1 Geotechnical Investigation. During the Plans, Specifications, and Estimates (PS&E) phase, a detailed geotechnical investigation will be conducted by qualified geotechnical personnel to assess the geotechnical conditions at the project area. The geotechnical investigation will include exploratory borings to investigate site-specific soils and conditions and to collect samples of subsurface soils for laboratory testing. Those soil samples will be tested to evaluate liquefaction potential, collapsibility potential, stability, and corrosion potential. The project-specific findings and recommendations of the geotechnical investigation will be summarized in a Structure Foundation Report and a Geotechnical Design Report to be submitted to the California Department of Transportation (Caltrans) for review and approval. Those findings and recommendations will be incorporated in the final design of the Build Alternative.

Adherence to recommendations within these reports would substantially reduce the geologic risks to below a level of significance. In addition, surficial soils that are sandy can be susceptible to soil erosion produced by running water and accelerated erosion on steep slopes. The clayey surficial soils near in the northern portion of the project are expected to expand when wet, and crack upon drying. Cracking allows infiltration of water from storms and irrigation, ultimately causing loosening of the surficial soils. This results in an increase of soil erodibility.

Section 2.9, Water Quality and Stormwater Runoff, contains additional project features related to soil erosion, including BMPs; and Section 2.12, Hazardous Waste/Materials, contains additional project features related to hazardous wastes and materials. Implementation of these project features during construction would minimize direct and indirect effects from soil erosion.

Faulting and Seismicity, and Groundwater: Although liquefaction potential is not a design consideration for the project, seismically induced settlement could occur within sandy soil due to reduction in volume during and shortly after an earthquake event. The seismically-induced settlement is anticipated to be on the order of 1.0 inch, and any settlement would be minimized also through implementation of PF-GEO-1.

No Build Alternative

Under the No Build Alternative, the permanent impacts discussed above for the Build Alternative would not occur because none of the permanent SR 55 improvements provided in the Build Alternative would be implemented and operated under this alternative. No direct or secondary impacts on geology, topography, and soils would result from implementation of the No Build Alternative.

2.10.4 Avoidance, Minimization, and/or Mitigation Measures

The project will incorporate the project features outlined in Section 2.10.3.2, Permanent Impacts, to help avoid and/or minimize potential impacts. No additional avoidance, minimization, and/or mitigation measures other than the Standard Project Features are required.

2.11 Paleontology

2.11.1 Regulatory Setting

Paleontology is a natural science focused on the study of ancient animal and plant life as it is preserved in the geologic record as fossils.

A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized projects.

- 16 USC 431-433 (the Antiquities Act) prohibits appropriating, excavating, injuring, or destroying any object of antiquity situated on federal land without the permission of the Secretary of the Department of Government having jurisdiction over the land. Fossils are considered "objects of antiquity" by the Bureau of Land Management, the National Park Service, the Forest Service, and other federal agencies.
- 16 USC 470aaa (the Paleontological Resources Preservation Act) prohibits the excavation, removal, or damage of any paleontological resources located on federal land under the jurisdiction of the Secretaries of the Interior or Agriculture without first obtaining an appropriate permit. The statute establishes criminal and civil penalties for fossil theft and vandalism on federal lands.
- 23 USC 1.9(a) requires that the use of federal-aid funds must be in conformity with all federal and State laws.
- 23 USC 305 authorizes the appropriation and use of federal highway funds for paleontological salvage as necessary by the highway department of any state, in compliance with 16 USC 431-433 and State law.

Under California law, paleontological resources are protected by CEQA.

2.11.2 Affected Environment

This section is based on the Paleontological Identification Report and Evaluation Report (PIR/PER) (October 2018).

The scope of paleontological work included a geologic map review, literature search, institutional record search, and field survey. The Area of Project Disturbance (APD) includes all areas where project activities have the potential to directly affect paleontological resources. The project site is located along SR 55 in an urban area that consists primarily of modern construction; wide, paved roadways; and vacant, graded and landscaped parcels.

2.11.2.1 Site Geology

The project site is located in the cities of Anaheim, Orange, Santa Ana, and Tustin in Orange County, California, within the Coastal Plain Region and Santa Ana Mountains of the Peninsular Ranges Geomorphic Province. The project area is mapped on the USGS Orange (1981) and Tustin (1981) California 7.5-minute topographic quadrangles on an unsectioned portion of the Santiago de Santa Ana Land Grant. The project is approximately 7.5 miles along SR 55 and

encompasses approximately 357.7 acres. Geologic mapping indicates that the project area and immediate vicinity are underlain by Miocene Puente Formation Yorba Member; Pliocene Fernando Formation Lower and Upper Members; Pleistocene old and very old alluvial fan deposits; Quaternary young alluvial fan, wash, and landslide deposits; and artificial fill.

The project area is situated in the Peninsular Ranges Geomorphic Province, a region characterized by northwest-trending fault-bounded mountain ranges, broad intervening valleys, and low-lying coastal plains. The Peninsular Ranges extend approximately 920 miles from the Los Angeles Basin to the southern tip of Baja California and vary in width from approximately 30 to 100 miles. Bedrock units in the Peninsular Ranges include Jurassic igneous rocks of the Southern California Batholith. The project area lies in both the Coastal Plain Region and the northwestern margin of the Santa Ana Mountains. The eastern Coastal Plain Region is underlain primarily by Pleistocene to Holocene non-marine sediments that were deposited from inland drainages. The Santa Ana Mountains comprise a fault block that has been uplifting since the Pleistocene along the Elsinore Fault Zone, which bounds the block's northeastern edge. These mountains tilt southwesterly toward the Coastal Plain and comprise folded Tertiary rocks and Mesozoic plutonic basement rock.

Geologic mapping indicates that the project area and immediate vicinity are underlain by Quaternary young alluvial fan, wash, and landslide deposits; Pleistocene old and very old alluvial fan deposits; Pliocene Fernando Formation Upper and Lower Members; and Miocene Puente Formation Yorba Member. Previously disturbed sediments and/or artificial fill are not mapped within the project area, although these sediments are present within the project area. Figure 2.11-1 (maps 1 through 3) illustrates the geologic mapping and underlying formations associated with the project site.

Puente Formation Yorba Member (Miocene)

The Miocene Puente Formation consists of shale, siltstone, sandstone, and pebble to cobble conglomerate and has an unknown maximum thickness of more than 13,000 feet. The Puente Formation is known to be locally equivalent to the Monterey Formation. The formation is subdivided into four members, which, from oldest to youngest, include the La Vida Member, Soquel Member, Yorba Member, and Sycamore Canyon Member. The Yorba Member is mapped immediately east of the northern portion of the project area and may be present at shallow depth within the APD.

The Puente Formation was deposited when the ocean still covered much of Southern California. Rapid uplift of landward sediments due to the geologically rapid convergence of the Pacific and Farallon plates caused the production of large amounts of terrestrially derived sediments. At that time, submarine canyons along the coast shed two main "megasequences" of turbidites (comparable to oceanic landslides) off the continental shelf and into the ocean basin, where they were interbedded with slower accumulating silts and clays.

The Yorba Member is late Miocene in age (~10 to 7.5 million years old), and generally consists of white to gray colored siltstone and sandstone with some gray-white to brick-red diatomaceous mudstone.


Figure 2.11-1. Project Geologic Map (1 of 3)



Figure 2.11-1. Project Geologic Map (2 of 3)



Figure 2.11-1. Project Geologic Map (3 of 3)

This unit is up to 3,000 feet thick at its center and is thought to consist of basin slope and basin plain facies. Fossils found in the Yorba Member include benthic and pelagic, and upper Mohnian-aged foraminifera, which indicate ocean depths of greater than 2,000 feet, and numerous fish taxa. Deep marine fish are also present in this unit that are today found only in water below 3,300 feet, below the photic zone. Species include anglerfish (Lophiiformes), deep-sea smelts (*Bathyalgidae*), hatchetfish (*Argyropelecus* sp.), and lanternfish (*Myctophidae*).

Numerous vertebrate fish fossil localities are recorded from the Puente Formation Yorba Member in Chino Hills, San Bernardino County. Recorded specimens include herring family (Clupeidae), extinct herring (Etringus sp., Xyne grex sp.), bristlemouth (Cyclothone sp.), lantern fish family (Myctophidae), ray-finned fish (Teleostei sp.), extinct bony fish (Ganolytes cameo sp.), extinct croaker (Lompoquia sp.), alder (Alnus sp.), deep-sea smelt (Bathylagus sp.), bonito (cf. Sarda sp.), jack fish (Pseudoseriola sp.), pipefish (Sygnathus sp.), and extinct viperfish (Chauliodus eximius). Additional Puente Formation localities were recorded during construction of the Tehachapi Renewable Transmission Project in Chino Hills and include fossilized plant, fish, and mammal. Specimens recorded include plane or sweetgum tree (Platanus or Liquidambar), algae (Algae), legume seed pod (Fabaceae cf. Cersis), sumac (Anacardiaceae), ray-finned fish (Teleostei sp.), lanternfish (Myctophidae), extinct bony fish (Ganolytes cameo), bristlemouth fish (*Cyclothone* sp.), spiny ray-finned fish (*Acanthomorpha* sp.), extinct bony fish (Eclipes sp.), drumfish (Sciaenidae sp.), extinct drumfish (Lompoquia), hammerhead shark (Sphyrna sp.), mammal (Mammalia), and whale (Cetacean). Recorded from the South Pointe Project located in Diamond Bar, Los Angeles County, are specimens of herring (cf. Etringus scintillans, Clupeidae), ray-finned fish (Scombridae, Teleostei), extinct bony fish (Eclipes sp., Ganolytes cameo), bony fish (Osteichthyes), and a rare eel specimen (Anguilliformes). The SR 57/60 Confluence Project, also located in Diamond Bar, produced specimens of plant and bony fish (Osteichthyes). The Puente Formation has a high paleontological potential based on Caltrans guidelines (Caltrans 2016a).

Fernando Formation Lower and Upper Members (Pliocene)

The Pliocene to Pleistocene Fernando Formation has an unknown maximum thickness and a complex nomenclatural history. The unit may be referred to in literature either by the Fernando Formation or by the individual members of the formation including, from oldest to youngest, the Repetto Claystone, the Pico Member, and the Saugus Member, as well as specific facies that have not been formally named. Two members of the Fernando Formation, including the Upper Member and Lower Member, are mapped in the northern portion of the project area. The Upper Member consists of sandstone, pebbly-sandstone, and sandy conglomerate. The Lower Member consists of siltstone, sandstone, and conglomerate.

Marine vertebrate fossils recovered from the Fernando Formation include fossil fish (e.g., great white shark, herring, hake, lanternfish, swordfish, mackerel, flounder) and whale specimens. Additional marine specimens of pinnipeds and dolphins, as well as mollusks and brachiopods, have also been published from the Fernando Formation. Terrestrial vertebrates include ground sloth, mastodon, mammoth, horse, camel, pronghorn antelope, and turkey. The Fernando Formation has high paleontological potential based on Caltrans guidelines (Caltrans 2016a).

Very Old Alluvial Fan Deposits - Pleistocene

Very old alluvial fan deposits were deposited during the early to middle Pleistocene (approximately 2.5 million years ago to 781,000 years ago). These sediments consist of reddishbrown colored, well-indurated, mostly well-dissected, moderately sorted alluvial fan deposits with mostly sand and gravel. Very old alluvial fan deposits are mapped at just east of the project area in the northern extent.

Taxonomically diverse and locally abundant Pleistocene animals and plants have been collected from older alluvial deposits throughout southern California and include mammoth (Mammuthus), mastodon (*Mammut*), camel (Camelidae), horse (Equidae), bison (*Bison*), giant ground sloth (Megatherium), peccary (Tayassuidae), cheetah (Acinonyx), lion (Panthera), saber tooth cat (*Smilodon*), capybara (*Hydrochoerus*), dire wolf (*Canis dirus*), and numerous taxa of smaller mammals (Rodentia). Pleistocene very old alluvial fan deposits have a high paleontological potential based on Caltrans guidelines (Caltrans 2016a).

Old Alluvial Fan Deposits - Pleistocene

Old alluvial fan deposits were deposited during the middle to late Pleistocene (approximately 781,000 years ago to 10,000 years ago). These sediments consist of reddish-brown colored, well-indurated, commonly dissected sand and gravel alluvial fan deposits. Old alluvial fan deposits are mapped in the north, central, and southern parts of the project area. Pleistocene old alluvial fan deposits yield the same paleontological resources as Pleistocene very old alluvial fan deposits. Pleistocene old alluvial fan deposits have a high paleontological potential based on Caltrans guidelines (Caltrans 2016a).

Quaternary Young Sedimentary Deposits - Pleistocene to Holocene

Young sedimentary deposits are Pleistocene to Holocene and include alluvial fan deposits, wash deposits, and landslide deposits. Alluvial fan and wash deposits include surficial sediments consisting of poorly consolidated alluvial gravel, sand, silt, and clay that were deposited in canyon and mountain drainage systems as well as in the lowest lying inland area. These sediments may be variable in color, though they are often tan to brown. These deposits are considered too young (less than 11,000 years old) to contain scientifically significant in-situ fossils. These sediments, however, may shallowly overlie older more fossiliferous sedimentary units. Young landslide deposits comprise abruptly displaced sections of land. Fossils contained within these deposits may lack stratigraphic context due to displacement from the original deposition, reducing scientific significance of the fossils. Young alluvial fan deposits are mapped in broad portions of the northern and southern project areas as well as portions of the central project area. Young wash deposits are mapped in relatively thin east-west trending sections to the north of the project area, and within the central portion of the project area. Young landslide deposits are mapped in several relatively small areas adjacent to the northern project area. Young alluvial fan, wash, and landslide deposits have low paleontological potential based on Caltrans guidelines (Caltrans 2016a).

Artificial Fill (Not Mapped) - Recent

Artificial fill comprises recent deposits of previously disturbed sediments displaced by construction operations and are found in areas where recent construction has taken place. Color is highly variable, and sediments are mottled in appearance. These sediments are mapped in a single section north of the project area but were observed during the field survey to cover the majority of the project area surface. Although these materials may contain fossil resources, they have been removed from their original locations and, therefore, lack significance. Artificial fill has low paleontological potential based on Caltrans guidelines (Caltrans 2016a).

Literature Review and Records Search

The literature reviewed included published and unpublished scientific papers. A paleontological record search was conducted on November 14, 2017, at the Natural History Museum of Los Angeles County (LACM) (October 2018); and no localities were identified within the project area. However, several fossil localities are adjacent to the project area that have been recorded from the same sedimentary deposits that occur within the project area at the surface and at depth. Additional record searches of online databases were completed. Localities LACM 1067, 1729, 2019, 3408, 3802, 3977, 3978, 3980, and 3986, which are located southwest of the project area east of Upper Newport Bay, collectively produced ghost shark (Chimaera, Chimaeroidei), thresher shark (Alopias superciliosus), giant white shark (Carcharocles), white shark (Carcharodon carcharias, Carcharodon sulcidens), bonito shark (Isurus oxyrinchus), spiny dogfish (Squalus acanthias), hake (Merluccius productus), codling (Moridae), queenfish (Seriphus), sculpins (Cottidae), rockfish (Sebastes), auklet (Mancalla californiensis), turkey (Meleagris), shearwater (Puffinus felthami), sea lion (Otariidae). Locality LACM 1652 is located northwest of the project area and northwest of the Santa Ana River and produced fossil sheep (Ovis). Locality LACM 4943 is located northwest of the project area and east of the Santa Ana River and produced fossil horse (Equus). Locality LACM 7867 is located southeast of the project area in Orange County Park and produced fossil pocket gopher (Thomomys).

Field Survey

The field survey for the entire project corridor was conducted on December 20, 2017. The paleontological field survey was performed in order to inspect the project area for the presence of surface fossils and evaluate the project area for the likelihood of subsurface fossil occurrences. The survey was completed after a review of aerial photographs indicated the survey sections were within areas of exposed sediment. The pedestrian survey included thorough inspection of potentially fossiliferous bedrock exposures and surficial deposits occurring within the project area. Sediment exposures as well as the surrounding areas were photographed and documented. Reference points were acquired using a Trimble Global Positioning System (GPS) unit. Sediment lithologies were recorded and analyzed and used to better interpret the project's paleontological sensitivity, and thus better understand the project's potential impact.

Although the intent was to survey the entire APD, approximately 99 percent of the APD could not be surveyed for paleontological resources because it is a paved roadway. The survey focus included inspecting areas of the alignment that contain native sediment outcrops of geologic units with high sensitivities. Areas of the alignment that are developed and/or mapped as low paleontological sensitivity were quickly traversed to confirm geologic mapping. The project site is situated in a highly developed area characterized by dense infrastructure and terrain that comprises low to moderate relief hills and relatively flat and low-lying broad valleys. The hills are constrained to the northern portion of the project area where Pliocene Fernando Formation and Miocene Puente Formation are located. The central and southern portions of the project area, which comprise Pleistocene old alluvial fan deposits and Quaternary young alluvial fan and wash deposits, are entirely flat and yielded no native sediment exposures. The majority of the alignment has been previously disturbed by construction and landscaping and includes infrastructures such as paved roads, including the SR 55, SR 22, SR 91, and I-5 freeways; transmission lines; and commercial and residential buildings. Vegetation density ranges from low in more developed areas to moderate and high along road shoulders, freeway embankments, and hillsides.

Due to the high level of previous disturbance and overall low relief terrain, sediment exposures were sparse and mostly constrained to the moderate relief hillsides and slopes located in the northern project area. Only one native bedrock outcrop, consisting of Fernando Formation, was observed along an approximately 100-foot-thick east-facing slope. The outcrop was relatively small compared to the slope, encompassing a surface area of approximately 50 square feet; and sediments were highly weathered and crumbly. The sediments consisted of moderately to well lithified, blue-gray, olive green, to orange-brown colored, well sorted siltstone and silty fine- to medium-grained sandstone. Sediments were mostly massive with some planar banding of the orange oxidized material. Similar sediments were observed in several additional areas within the northern project area, although they only occurred as weathered and previously disturbed surficial sediments with no in situ structure. Additional surficial sediments observed in the northern area consisted of previously disturbed younger alluvial fan deposits and artificial fill, which were generally poorly consolidated, medium to dark brown colored, moderately sorted silt with some fine- to medium-grained sand and subrounded pebble to small cobble-sized plutonic clasts. Additionally, artificial sediments often contained imported pebble-sized gravel. No undisturbed native sediments were observed in areas mapped as Puente Formation or old alluvial fan deposits. Furthermore, only previously disturbed surficial sediments were observed in the central and southern portions of the project area.

No paleontological resources were observed or collected during the survey. However, sediments conducive to fossil preservation, including those of the Pliocene Fernando Formation, were observed. The fine-grained material characteristic of these sediments is favorable for harboring recognizable and intact scientifically significant vertebrate fossils.

2.11.3 Environmental Consequences

2.11.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

The Build Alternative would require ground-disturbance activities and modifications to the existing freeway corridor and associated ramps which could result in direct impacts to paleontological resources. Although construction activities are considered temporary and short-term, the impacts to paleontological resources are considered permanent impacts. Section 2.11.3.2, Permanent Impacts, describes these impacts and includes Project Features to address potential direct and indirect impacts to paleontological resources associated with ground-disturbance activities during construction.

No Build Alternative

Under the No Build Alternative, none of the proposed improvements would be constructed. The No Build Alternative would maintain the existing conditions; therefore, the No Build Alternative would not result in direct or indirect temporary adverse impacts related to paleontological resources as a result of construction activities.

2.11.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

Excavations (including drilling) into areas containing native Miocene, Pliocene, and Pleistocene sediments may result in significant direct impacts to paleontological resources. Surface grading or shallow excavations that are entirely within Quaternary young alluvial fan, wash, and landslide deposits; and artificial fill in the project area are unlikely to impact significant fossil vertebrate remains. However, older deposits are likely present at depth beneath Quaternary young sedimentary deposits and previously disturbed or artificial fill.

Due to the flat terrain of the central and southern project areas and limited exposures of subsurface native sediments on the entire project area, the depth of native Miocene, Pliocene, and Pleistocene sediments beneath the ground surface could not be determined during the field survey. Only one exposure of in situ Pliocene Fernando Formation was observed during the survey. Depending on the depth and location of earthmoving activities, project construction has the potential to result in significant adverse direct impacts to paleontological resources within the project area. There is potential for direct impacts both at the surface and at depth in areas of native high sensitivity deposits and at depth in areas of low sensitivity surface deposits. Indirect or secondary impacts on paleontological resources are not anticipated to occur.

Implementation of Project Feature PF-PAL-1 would address potential direct impacts to paleontological resources associated with ground-disturbance activities during construction and reduce them to less than significant.

PF-PAL-1 If unanticipated paleontological resources are discovered, all work within 60 feet of the discovery must cease and the construction Resident Engineer will be notified. Work cannot continue near the discovery until authorized.

No Build Alternative

Under the No Build Alternative, none of the proposed improvements would be constructed. The No Build Alternative would maintain the existing conditions; therefore, the No Build Alternative would not directly result in permanent adverse impacts to paleontological resources as a result of post-construction activities. No indirect or secondary impacts on paleontological resources would result from implementation of the No Build Alternative.

2.11.4 Avoidance, Minimization, and/or Mitigation Measures

In addition to implementation of project feature PF-PAL-1, the project will incorporate mitigation measures PALEO-1 and PALEO-2, as outlined below, to help mitigate, avoid and/or minimize potential direct impacts to paleontological resources.

- PALEO-1 Prior to construction, or initiated at the 65 percent Plans, Specification and Estimate (PS&E) design phase per Caltrans process, a Paleontological Mitigation Plan (PMP) will be prepared. It should provide recommended monitoring areas based on proposed construction activities and locations in sensitive geologic formations, depth of excavation, and results of geotechnical studies completed in the Area of Project Disturbance (APD) and immediate vicinity; a description of a worker training program; detailed procedures for monitoring, fossil recovery, laboratory analysis, and museum curation; notification procedures in the event of a fossil discovery by a paleontological monitor or other project personnel; and a potential cost estimate for mitigation. A curation agreement with a qualified repository with a curator on staff and retrievable storage will be required if paleontological specimens requiring preservation are identified.
- PALEO-2 Construction monitoring should initially be implemented for excavations occurring in areas of sediments with paleontological high sensitivity, with the exception of pile-driving activities and drilling using an auger bit that is less than 3 feet in diameter. Excavations in areas of low sensitivity sediments should be periodically spot checked when impacted depths exceed 5 feet to check for the presence of underlying older, high sensitivity deposits unless the depth to underlying sensitive sediments can be determined more precisely during the geotechnical review conducted during preparation of the PMP. If it is determined that only Quaternary young alluvial fan deposits (low paleontological potential [Caltrans 2016a]), Quaternary young wash deposits (low paleontological potential [Caltrans 2016a]), Quaternary young landslide deposits (low paleontological potential [Caltrans 2016a]), or artificial fill (low paleontological potential [Caltrans 2016a]) is impacted, monitoring and spot checking should be reduced or halted at the direction of the Principal Paleontologist. Quaternary young alluvial fan, wash, and landslide sediments and artificial fill should not be monitored. However, any potential fossils in these sediments that are unearthed during construction should be evaluated by the Principal Paleontologist as described in the PMP.

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2.12 Hazardous Waste/Materials

2.12.1 Regulatory Setting

Hazardous materials, including hazardous substances and wastes, are regulated by many state and federal laws. Statutes govern the generation, treatment, storage, and disposal of hazardous materials, substances, and waste, and also the investigation and mitigation of waste releases, air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act of 1980 and the Resource Conservation and Recovery Act of 1976. The purpose of Comprehensive Environmental Response, Compensation and Liability Act often referred to as "Superfund," is to identify and clean up abandoned contaminated sites so that public health and welfare are not compromised. The Resource Conservation and Recovery Act provides for "cradle to grave" regulation of hazardous waste generated by operating entities. Other federal laws include:

- Community Environmental Response Facilitation Act of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act
- Atomic Energy Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide, and Rodenticide Act

In addition to the acts listed above, EO 12088, *Federal Compliance with Pollution Control Standards*, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

California regulates hazardous materials, waste, and substances under the authority of the California Health and Safety Code and is also authorized by the federal government to implement Resource Conservation and Recovery Act in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could impact ground and surface water quality. California regulations that address waste management and prevention and cleanup of contamination include Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous Waste, Title 23 Waters, and Title 27 Environmental Protection.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during project construction.

2.12.2 Affected Environment

This section is based on the *Phase I Initial Site Assessment* (September 2014, updated 2018). The scope of work for this *Initial Site Assessment* did not include testing of electrical equipment for the presence of polychlorinated biphenyls or collection of other environmental samples such as air, water, building materials, or paint; assessment of natural hazards such as naturally occurring asbestos, radon gas, or methane gas; assessment of the potential presence of radionuclides; or assessment of non-chemical hazards such as the potential for damage from earthquakes or floods; or the presence of endangered species, wetlands, or wildlife habitats. This *Initial Site Assessment* also did not include an extensive assessment of the environmental compliance status of the project site or of the businesses operating in the surrounding area or a health-based risk assessment.

A detailed site reconnaissance was not conducted due to the size of the proposed project and that no new permanent easements or property acquisitions would be required. In addition, environmental liens were not researched since no new permanent easements or property acquisitions would be required. Similarly, User Questionnaires were also not completed as a part of this IS/EA. Caltrans was contacted to request any potential records regarding known spills or contamination within the project site.

2.12.2.1 Site Reconnaissance and Record Search Methodology

The following were conducted as part of the IS/EA:

- Site Reconnaissance Visit: On December 22, 2017, a reconnaissance-level assessment was conducted within the right-of-way and consisted of observation and documentation of existing conditions of the project site. Elevation differences, sound/property walls, and vegetation limited the observations for areas adjacent to the project site.
- Environmental Database Review: A records search of federal and State environmental databases for the area within approximately 0.25 mile of the project was conducted on October 23, 2017.
- Agency Records Review: The U.S. EPA, the California Department of Toxic Substances Control Hazardous Materials Division, the Santa Ana RWQCB, National Pipeline Mapping System, California Department of Public Health, and the Orange County Health Care Agency were contacted to obtain documentation for properties within and adjacent to the project right-of-way.
- **Historical Research**: Aerial photographs and historical topographic maps of the area along and in the vicinity of the project area were reviewed.

2.12.2.2 Results of the Initial Site Assessment

Based on the site reconnaissance visit and records searches, a few potential hazardous materials sites and pipelines were located within the existing SR 55 right-of-way and adjacent to the project site. These locations and types of hazardous materials are described below.

Proposed Acquisition Parcels

Based on the site reconnaissance and database search discussed above in Section 2.12.2.1, proposed TCEs are not located on properties identified as having hazardous waste concerns.

Non-Acquisition Parcels

Based on the site reconnaissance and database search discussed above in Section 2.12.2.1, the following three properties are located in the vicinity of the maximum disturbance limits of the Build Alternative and were identified as potential recognized environmental condition sites:

- The La Veta Former Refuse Disposal Station, northeast corner of La Veta Avenue and Tustin Street, Orange, CA 92860. This property adjoins the project site and is located east and west of SR 55, approximately 1,200 feet north of the proposed improvements between I- 5 and SR 22, and is adjacent to Santiago Creek between La Veta Avenue and East Chapman Avenue in the City of Orange. Current land uses include YMCA; Yorba Park, Santiago Creekside Estates Mobile Home Park; Arroyo Casa Apartment Complex; and single-family residential. The facility was formerly used as a burn dump; and the soil is impacted with heavy metals, dioxins, and furans.
- Chevron Station, 1940 East Katella Avenue, Orange, CA 92667. This site has had historical releases to the on-site soil. Based on EnviroStor documents (DTSC 2019), groundwater has never been detected at this site up to 108 feet below ground surface. This site adjoins the proposed ramp improvements at Katella Avenue; however, contaminated area is on the other side of the property. There is a low potential for total petroleum hydrocarbons and volatile organic compounds to have extended off site into this area.
- The former dry cleaning site, northeast corner of 17th Street and Tustin Avenue, Santa Ana, CA 92705. This site is an active voluntary cleanup site. This site is located south of 17th Street approximately 650 feet west of physical improvements for the project. There is potential for tetrachloroethylene (PERC) and trichloroethylene to have extended off site, toward the project site. Groundwater flow direction is depicted to the south and southwest, which is consistent with the surface topography in the surrounding area (OCWD 2015) and is at least 120 feet bgs based on EnviroStor documents.

Pipelines

Based on the database search discussed above in Section 2.12.2.1, the following two hazardous material pipelines transect the project site:

- An active (unfilled) non-highly volatile liquids (HVL) product pipeline transects the project site at 17th Street. The operator of this pipeline is documented as Department of Defense's Defense Energy Support Center. According to the as-builts, this line is approximately 8 to 10 feet below the existing freeway and is protected in place.
- An active (filled) multi-products pipeline transects the project site north of Katella Avenue and south of Taft Avenue in the City of Orange. The operator of this pipeline is documented as SFPP, LP.

On January 12, 2018, the owners/operators of these pipelines were contacted to obtain additional information on pipeline size, location, and determine if any reported releases have occurred. On January 18, 2018, the facility manager with Department of Defense's Defense Energy Support Center responded via phone. He verified the active pipeline that transects the project site at 17th Street and said he was not aware of any reported releases from the pipeline. He asked to be informed in the event construction activities would take place within 10 feet of the pipeline and that all activities be conducted in accordance with the Department of Defense's Final Pipeline Construction and Repair Requirements Manual. On February 9, 2018, the director with Kinder Morgan responded via email stating Kinder Morgan does not have any records of past or current environmental contamination at or adjacent to the pipeline locations north of Katella Avenue.

Oil and Gas Fields

Based on the database search discussed above in Section 2.12.2.1, the following three oil and gas wells are located in the vicinity of the project site. Evidence of oil or gas wells or oilfield-related facilities was not identified within the project site during the site reconnaissance visit.

- Operated by Chevron U.S.A. Inc. and leased by "Tustin Community," a plugged oil and gas well is located approximately 150 feet east of SR 55, just west of North Sacramento Street between Katella Avenue to the north and East Collins Avenue to the south. According to the information reviewed on the Division of Oil, Gas, and Geothermal Resources website (2017), the well was drilled as a prospect well and was not producing; therefore, the well was plugged and abandoned with the oversight of Division of Oil, Gas, and Geothermal Resources.
- Operated by McKee Oil Company and leased by Kokx Community, a plugged and abandoned oil and gas well is located approximately 375 feet east of SR 55, just north of East Villa Vista Way. No additional information was obtained from the Division of Oil, Gas, and Geothermal Resources website (2017).
- Operated by Long Beach Consolidated Oil Company, an idle oil and gas well is located approximately 200 feet east of the SR 55/SR 91 interchange. According to the information reviewed on the Division of Oil, Gas, and Geothermal Resources website (2017), no log or history has been submitted for this well.

Polychlorinated Biphenyls

Multiple pad- and pole-mounted transformers were observed adjacent to the project site. Staining was not observed beneath the transformers, and all the transformers appear to be working properly and in good condition. In addition, the updated database review did not report polychlorinated biphenyl releases along the project site.

The observed transformers are reportedly owned and operated by SCE; and, as such, SCE accepts responsibility for cleanup from leakage, repair, or replacement activities, provided the cause is not customer misuse.

Staining, Discolored Soils, and/or Corrosion

Evidence of staining was observed on the project site along the shoulders of SR-55 and at the parking lot for the Park and Ride located on the east-side of North Tustin Street between Lincoln

Avenue and the SR 55 southbound on-ramp. Stains were typical of vehicle leaks and were generally no more than 1.5 feet in diameter and represent de minimus impacts.

Aerially Deposited Lead

The project site is SR 55 and has been heavily traveled. The potential for ADL impacted soils exists along the project limits.

Lead Chromate

Yellow pavement traffic markings (thermoplastic and paint) on SR 55 and the arterials crossing SR 55 potentially contain hazardous levels of lead chromate.

Lead-Based Paint

A lead-based paint (LBP) survey was not performed as part of this investigation. LBP may be present in some of the bridge structures associated with the project site. Yellow striping paint frequently used on highways may contain lead and/or chromium.

Asbestos-Containing Materials

A survey for asbestos-containing materials (ACM) was not performed as part of this investigation; however, ACM may be present in some of the bridge structures within the project site.

On-Site Wells

The updated EDR Data Map Corridor Study Report (Appendix B of the Initial Site Assessment [September 2014, updated 2018]) did not identify any spills that would require clean-up or monitoring within the project site. Any available information was requested from Caltrans District 12 regarding locations that were or are undergoing clean-up or monitoring within the project site. Caltrans District 12 Environmental Planning and Maintenance groups indicated that they did not have any records of spills. Evidence of groundwater monitoring wells was not observed on the project site. Evidence of oil or gas production wells was not observed on the project site.

Waste Disposal and Dumping

Waste is not currently generated at the project site. Typical roadside litter was observed throughout the corridor. Regular litter removal activities on the project site are conducted by Caltrans. The project is covered with various forms of litter discarded from passing vehicles or blown onto the property by the wind. Regular litter removal activities are conducted by Caltrans. No illegal dump sites were observed on the project site.

Storage Tanks, Hazardous Substances, Drums, and Other Chemical Containers

Evidence of underground storage tanks (such as vent lines, fill, or overfill ports) was not observed on the project site. Hazardous substances, drums, or other chemical containers were not observed within the visible areas of the project site.

Other Observations

Stormwater drains were identified along the shoulders and median of SR 55. Evidence of pits, ponds, lagoons, septic systems, sumps, wastewater, and cisterns was not observed at the project site. No unusual odors were detected on the project site. Stressed vegetation was not observed on the project site. Pesticides were not observed on the project site. A former railroad right-of-way (Southern Pacific Railroad) transects the project site north of Katella Avenue and south of Taft Avenue in the City of Orange.

2.12.3 Environmental Consequences

2.12.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

Three properties are located in the vicinity of the maximum disturbance limits of the Build Alternative and were identified as potential recognized environmental condition sites; however, no improvements or excavation are anticipated on or adjacent to these three sites. The Build Alternative would not result in adverse impacts to these three sites identified as potential recognized environmental condition sites during construction.

Temporary impacts related to hazardous materials/wastes during project construction could occur within the maximum disturbance limits for the Build Alternative. All staging would occur within Caltrans' right-of-way, and no permanent property acquisition would be required. The project would require two TCEs. One TCE will be required from the Village Apartments and would impact a residential carport, which houses fifteen parking spaces and storage cabinets. The carport will be removed by the project contractor and the owner will be reimbursed for the cost of a carport replacement. An additional TCE will be required from a small, vacant parcel owned by A-H properties. This TCE is situated along the SR55 right of way between the Village Apartments parcel to the south and the medical office building to the north. No additional easements or property acquisitions would be required. The Build Alternative would not result in adverse impacts associated with the TCEs during construction.

Three oil and gas wells are located in the vicinity of the project site. Two of the wells (operated by Chevron U.S.A. Inc and leased by Tustin Community and operated by McKee Oil Company and leased by Kokx Community) are listed as plugged and abandoned. One well operated by Long Beach Consolidated Oil Company is an idle well. All three wells have a low potential to adversely affect the project site. The Build Alternative would not result in adverse impacts to these three wells during construction.

ADL from the historical use of leaded gasoline exists along roadways throughout California. There is the likely presence of soils with elevated concentrations of lead as a result of ADL on the state highway system right-of-way within the limits of the project alternative. Soil determined to contain lead concentrations exceeding stipulated thresholds must be managed under the July 1, 2016, ADL Agreement between Caltrans and the California Department of Toxic Substances Control . This ADL Agreement allows such soils to be safely reused within the project limits as long as all requirements of the ADL Agreement are met.

Although the potential for lead contamination to exist within exposed soils along SR 55 due to ADL is unlikely to remain, the implementation of Project Feature PF-HAZ-1 should occur in order to confirm no ADL is present through verification sampling.

PF-HAZ-1 An ADL survey consisting of the collection of shallow subsurface soil samples should be conducted within the project limits, adjacent to the current right-of-way, by a certified specialist during the PS&E phase. The survey is required to determine if special handling is required pursuant to Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils effective July 1, 2016 (DTSC 2016), or as otherwise updated. ADL sampling should be completed for incorporation into the construction bid documents.

With implementation of Project Feature PF-HAZ-2, the Build Alternative would not directly result in adverse impacts with soils containing lead concentrations during construction.

Yellow striping paint potentially containing chromium and or lead was observed within the current rights-of-way located within the project site. Removal of these materials during construction could affect construction workers and the surrounding environment. Project Feature PF-HAZ-2 would include testing and removal requirements associated with the striping paint.

PF-HAZ-2 Testing and removal requirements for yellow striping should be conducted in accordance with Caltrans Construction Manual Chapter 7-107E (Caltrans 2017b) and by a certified specialist during the next phase of the project (PS&E).

With implementation of Project Feature PF-HAZ-3, the Build Alternative would not result in direct adverse impacts associated with removing yellow striping paint during construction.

ACMs and LBP may be present in some of the bridges and structures associated with the project; however, no demolition or modification of bridges is anticipated. Project Feature PF-HAZ-3 would be implemented should demolition or modification of a bridge be required.

PF-HAZ-3 If demolition or modification of any structure is required, a comprehensive LBP survey be completed prior to demolition of any structures. The surveys should be conducted by a certified specialist during the next phase of the project (PS&E). If ACMs are identified during an ACM survey, ACMs should be abated in accordance with State and federal laws prior to demolition.

With implementation of Project Feature PF-HAZ-4, the Build Alternative would not directly result in adverse impacts related to ACMs and LBP during construction.

Multiple pad- and pole-mounted transformers were observed adjacent to the project site. Given the utility ownership under SCE and observed conditions, the electrical transformers are not considered to represent a likely past, present, or material threat of release nor do they represent a recognized environmental condition site to the project site at this time. The Build Alternative would not result in adverse impacts related to polychlorinated biphenyls during construction.

Groundwater levels are approximately 40 to 100 bgs and may be contaminated within the project site. As noted in Section 2.9, Water Quality and Stormwater Runoff, groundwater is not expected to adversely affect construction of the proposed project and dewatering activities are not

anticipated. However, fluctuations of the groundwater level, localized zones of perched water, and an increase in soil moisture should be anticipated during and following the rainy seasons in the area (October 1 through May 1) or periods of locally intense rainfall or stormwater runoff. Further investigation during the PS&E phase will determine groundwater levels and whether dewatering is required. In addition, permits and BMPs associated with water quality and stormwater runoff as described in Section 2.9 will be required. The Build Alternative would not result in adverse impacts related to contaminated soil and/or groundwater during construction.

In general, observations should be made during construction activities for areas of possible contamination including, but not limited to, the presence of underground facilities, buried debris, waste drums, tanks, stained soil, or odorous soils. Project Feature PF-HAZ-4 will provide the appropriate avoidance, minimization, or mitigation for unknown hazards.

PF-HAZ-4 Should such materials be encountered during construction, construction activities would be stopped; and further investigation would be completed in accordance with Caltrans Construction Manual for discovery of unknown contamination.

With implementation of Project Feature PF-HAZ-4, the Build Alternative would not result in direct adverse impacts related to unknown hazards.

Two active pipelines transect the project site. The HVL product pipeline is approximately 8 to 10 feet below the existing freeway along 17th Street and is protected in place. Therefore, direct and indirect impacts to this pipeline are not anticipated. The multi-products pipeline is located north of Katella Avenue and south of Taft Avenue in the City of Orange, however, no improvements or excavation is anticipated at this location. Project Feature PF-HAZ-1 would include coordination with the owner of the HVL product pipeline and additional assessment if disturbance of the pipelines is required.

PF-HAZ-5 If it is determined that disturbance of or within the vicinity of the hazardous materials pipelines is required, additional assessment may be warranted. During the PS&E phase, the owner of the HVL product pipeline will be contacted to evaluate potential design impacts at that time. All activities will be conducted in accordance with the Department of Defense's Final Pipeline Construction and Repair Requirements Manual.

With implementation of measure PF-HAZ-5, the Build Alternative would not result in direct adverse impacts to these two active pipelines during construction.

The former Southern Pacific Railroad right-of-way transects the project site north of Katella Avenue and south of Taft Avenue in the City of Orange. Soils may be impacted by total petroleum hydrocarbons, polycyclic aromatic hydrocarbons, and/or metals; however, no improvements are proposed within the Southern Pacific Railroad right-of-way. Project Feature PF-HAZ-6 would include additional assessment if improvements are proposed within the railroad right-of-way.

PF-HAZ-6 If it is determined that ground disturbance within the Southern Pacific Railroad right-of-way is required, additional assessment may be warranted to identify contaminants and potential hazards.

The Build Alternative would not result in direct adverse impacts related to the railroad right-ofway during construction.

No Build Alternative

The No Build Alternative would not result in the disturbance or removal of any soils, groundwater, or structures and, therefore, would not result in temporary direct or indirect impacts related to hazardous waste and materials.

2.12.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

Routine maintenance activities during operation of the Build Alternative would be required to follow applicable regulations with respect to the use, storage, handling, transport, and disposal of potentially hazardous materials. Therefore, the operation of the Build Alternative would not result in adverse impacts related to hazardous waste or materials. Indirect or secondary impacts on hazardous waste and materials are not anticipated to occur.

No Build Alternative

The No Build Alternative would not change the existing physical environment; and, therefore, no direct permanent impacts related to hazardous waste would occur under this alternative. No indirect or secondary impacts on hazardous waste and materials would result under the No Build Alternative. Similar to the Build Alternative, routine maintenance activities would continue under the No Build Alternative, including compliance with applicable regulations regarding the handling and disposal of potentially hazardous materials.

2.12.4 Avoidance, Minimization, and/or Mitigation Measures

The project will incorporate the project features, PF-HAZ-1 through PF-HAZ-6, outlined above in Section 2.12.3, Environmental Consequences, to help avoid and/or minimize potential impacts. No additional avoidance, minimization, and/or mitigation measures other than the Standard Project Features are required.

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2.13 Air Quality

2.13.1 Regulatory Setting

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act (CCAA) is its companion State law. These laws, and related regulations by the U.S. EPA and the California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM)—which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM₁₀) and particles of 2.5 micrometers and smaller (PM_{2.5})—and sulfur dioxide (SO₂). In addition, national and state standards exist for lead (Pb), and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H₂S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under NEPA. In addition to this environmental analysis, a parallel "Conformity" requirement under the FCAA also applies.

2.13.1.1 Conformity

The conformity requirement is based on FCAA Section 176(c), which prohibits USDOT and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to the State Implementation Plan (SIP) for attaining the NAAQS. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional (or planning and programming) level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. U.S.EPA regulations at 40 CFR 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), and in some areas (although not in California) sulfur dioxide (SO₂). California has nonattainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO₂, and also has a nonattainment area for lead (Pb); however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of RTPs and FTIPs that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and

four years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the FCAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), FHWA, and FTA make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept and scope and the "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and TIP; the project has a design concept and scope that has not changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and EPA-approved emissions models; and in PM areas, the project complies with any control measures in the SIP. Furthermore, additional analyses (known as hot-spot analyses) may be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

The proposed project was submitted to stakeholders at the Transportation Conformity Working Group (TCWG) meeting on May 22, 2018, pursuant to the Interagency Consultation requirement of 40 CFR 93.105 (c)(1)(i). U.S. EPA, FHWA, Caltrans, California ARB, SCAQMD, and other interagency consultation participants concurred that the project is not a project of air quality concern (POAQC) under 40 CFR 93.123(b)(1) regarding POAQC determination. The project is not considered a POAQC because it does not meet the definition as defined in USEPA's Transportation Conformity Guidance (see TCWG meeting notes in the Air Quality Assessment Report [November 2018]).

2.13.2 Affected Environment

An Air Quality Assessment Report (November 2018) was prepared to assess the impacts of the project on regional and local air quality. The following information summarizes the contents and findings of the Air Quality Assessment Report.

2.13.2.1 Climate and Meteorological Conditions

The project is located within the South Coast Air Basin, which is a 6,600-square-mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. The South Coast Air Basin includes Orange County and the non-desert parts of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area of Riverside County.

The South Coast Air Basin is characterized as having a Mediterranean climate (i.e., a semiarid environment with mild winters, warm summers, and moderate rainfall). The region generally lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild and tempered by cool sea breezes. The extent and severity of the air pollution problem in the South Coast Air Basin is a function of the area's natural physical characteristics (i.e., weather and topography), as well as man-made influences (i.e., development patterns and lifestyle).

Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants throughout the South Coast Air Basin.

Temperature inversions are common, affecting localized pollutant concentrations in the winter and enhancing ozone formation in the summer. Mountains averaging 4,000 to 6,000 feet in elevation tend to trap pollutants in the region by limiting air flow. Average temperatures in the coastal area vary from lows in the mid-50s to highs in the mid-70s in degrees Fahrenheit, with annual precipitation ranging from 8 to 12 inches. Total precipitation in the project area averages approximately 9.4 inches annually at the nearby JWA. Precipitation occurs mostly during the winter and relatively infrequently during the summer.

Wind patterns in the project area are also measured and recorded at the JWA meteorological station. Wind direction is predominantly from the southwest in the vicinity of the project, blowing onshore from the coast of the Pacific Ocean that lies 10.5 miles to the southwest of the project area. The average wind speed at the monitoring station is approximately 5.4 mph, with calm winds occurring approximately 3.4 percent of the time.

2.13.2.2 Air Quality Attainment Status

The U.S. EPA has established NAAQS for six criteria pollutants that have been linked to potential health concerns. These federal criteria pollutants include CO, NO₂, O₃, PM (PM₁₀ and PM_{2.5}), Pb, and SO₂. In addition to the NAAQS, the State of California has established ambient air quality standards (CAAQS) for visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride as well as more stringent standards for the criteria pollutants. Table 2.13-1 shows the NAAQS and CAAQS in addition to the principal health effects, atmospheric effects, and typical sources of each pollutant.

Table 2.13-1 also presents the attainment status designations for the Orange County portion of the South Coast Air Basin in relation to both the NAAQS and the CAAQS. Under the NAAQS, the project area is designated Nonattainment – Extreme for O₃ and Nonattainment – Moderate for PM_{2.5}, while being designated Attainment – Maintenance for the remaining regulated pollutants. Emissions of atmospheric O₃ precursors (reactive organic gases and NO_x) and particulate matter are the pollutants of greatest concern in the project area. Under the State standards, the project area is designated nonattainment for O₃, PM₁₀, and PM_{2.5} and is designated attainment for all other pollutants.

Pollutant	Averaging Time	State ^a Standard	Federal ^ь Standard	Principal Health and Atmospheric Effects	ealth and Atmospheric Typical Sources		Federal Project Area Attainment Status
Ozone (O ₃)	1 hour	0.09 ppm ^c	NA ^d	High concentrations irritate lungs.	Low-altitude ozone is almost	Nonattainment	Nonattainment
	8 hours	0.070 ppm	0.070 ppm (4 th highest in 3 years)	Long-term exposure may cause lung tissue damage and cancer. Long- term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	entirely formed from reactive organic gases/volatile organic compounds (ROG or VOC) and nitrogen oxides (NOx) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.		– Extreme
Carbon	1 hour	20 ppm	35 ppm	CO interferes with the transfer of	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the	Attainment	Attainment –
(CO)	8 hours	9.0 ppm	9 ppm	sensitive tissues of oxygen. CO also			Maintenance
	8 hours (Lake Tahoe)	6 ppm	NA	is a minor precursor for photochemical ozone. Colorless, odorless.	traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.		
Respirable Particulate Matter (PM ₁₀) ^e	24 hours	50 μg/m ^{3 f}	150 μg/m ³ (expected number of days above standard < or equal to 1)	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic and other	Dust- and fume-producing industrial and agricultural operations; combustion smoke & vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities;	Nonattainment	Attainment – Maintenance
	Annual	20 µg/m³	NA ^e	aerosol and solid compounds are part of PM ₁₀ .	unpaved road dust and re- entrained paved road dust; natural sources.		
Fine	24 hours	NA	35 µg/m³	Increases respiratory disease, lung	Combustion including motor	Nonattainment	Nonattainment
Particulate Matter (PM ₂₅)	Annual	12 µg/m³	12.0 µg/m ³	damage, cancer, and premature death. Reduces visibility and	vehicles, other mobile sources, and industrial activities: residential		- Moderate
e marce (e m2.5)	24 hours (conformity process ^g)	NA	65 µg/m³	produces surface soiling. Most diesel exhaust particulate matter—a toxic air contaminant—is in the PM _{2.5} size	and agricultural burning; also formed through atmospheric chemical and photochemical		
	Secondary Standard (annual; also for conformity process ^e)	NA	15 μg/m ³ (98 th percentile over 3 years)	range. Many toxic & other aerosol and solid compounds are part of PM _{2.5} .	including NOx, sulfur oxides (SOx), ammonia, and ROG.		

Table 2.13-1: State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State ^a Standard	Federal ^ь Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Nitrogen	1 hour	0.18 ppm	0.100 ppm ^h	Irritating to eyes and respiratory tract.	Motor vehicles and other mobile or	Attainment	Attainment -
Dioxide (NO ₂)	Annual	0.030 ppm	0.053 ppm	Colors atmosphere reddish-brown. Contributes to acid rain & nitrate contamination of stormwater. Part of the "NOx" group of ozone precursors.	portable engines, especially diesel; refineries; industrial operations.		Maintenance
Sulfur Dioxide (SO ₂)	1 hour	0.25 ppm	0.075 ppm ⁱ (99 th percentile over 3 years)	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural	Attainment	Attainment – Unclassified
	3 hours	NA	0.5 ppm ^j	visibility.	sources like active volcanoes.		
	24 hours	0.04 ppm	0.14 ppm (for certain areas)	hea low	heavy-duty diesel vehicles if ultra- low sulfur fuel not used.		
	Annual	NA	0.030 ppm (for certain areas)				
Lead (Pb) ^k	Monthly	1.5 µg/m³	NA	Disturbs gastrointestinal system.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from older gasoline use may exist	Attainment	Attainment -
	Calendar Quarter	NA	1.5 μg/m ³ (for certain areas)	Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.			(Project Area)
	Rolling 3- month average	NA	0.15 µg/m ^{3 ∟}		in soils along major roads.		
Sulfate	24 hours	25 μg/m³	NA	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.	Attainment	N/A
Hydrogen Sulfide (H ₂ S)	1 hour	0.03 ppm	NA	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea. Strong odor.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.	Attainment	N/A

Pollutant	Averaging Time	State ^a Standard	Federal ^ь Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%	NA	Reduces visibility. Produces haze. NOTE: not directly related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other "Class I" areas. However, some issues and measurement methods are similar.	See particulate matter above. May be related more to aerosols than to solid particles.	Attainment	N/A

Notes: Greenhouse Gases and Climate Change: Greenhouse gases do not have concentration standards for that purpose. Conformity requirements do not apply to greenhouse gases.

µg/m³: micrograms per cubic meter; NA: not applicable; PM: particulate matter; ppm: parts per million; ROG: reactive organic gas; VOC: volatile organic compound

a State standards are "not to exceed" or "not to be equaled or exceeded" unless stated otherwise.

b Federal standards are "not to exceed more than once a year" or as described above.

c ppm: parts per million

d Prior to 6/2005, the 1-hour ozone NAAQS was 0.12 ppm. Emission budgets for 1-hour ozone are still be in use in some areas where 8-hour ozone emission budgets have not been developed, such as the S.F. Bay Area.

e Annual PM₁₀ NAAQS revoked Óctober 2006; was 50 μg/m³. 24-hr. PM₂₅ NAAQS tightened October 2006; was 65 μg/m³. Annual PM₂₅ NAAQS tightened from 15 μg/m³ to 12 μg/m³ December 2012 and secondary annual standard set at 15 μg/m³.

f µg/m³: micrograms per cubic meter

g The 65 µg/m³ PM_{2.5} (24-hr) NAAQS was not revoked when the 35 µg/m³ NAAQS was promulgated in 2006. The 15 µg/m³ annual PM_{2.5} standard was not revoked when the 12 µg/m³ standard was promulgated in 2012. The 0.08 ppm 1997 ozone standard is revoked FOR CONFORMITY PURPOSES ONLY when area designations for the 2008 0.75 ppm standard become effective for conformity use (7/20/2013). Conformity requirements apply for all NAAQS, including revoked NAAQS, until emission budgets for newer NAAQS are found adequate, SIP amendments for the newer NAAQS are approved with a emission budget, EPA specifically revokes conformity requirements for an older standard, or the area becomes attainment/unclassified. SIP-approved emission budgets remain in force indefinitely unless explicitly replaced or eliminated by a subsequent approved SIP amendment. During the "Interim" period prior to availability of emission budgets, conformity tests may include some combination of build vs. no build, build vs. baseline, or compliance with prior emission budgets for the same pollutant.

h Final 1-hour NO₂ NAAQS published in the Federal Register on 2/9/2010, effective 3/9/2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause re-designation to nonattainment in some areas after 2016.

i EPA finalized a 1-hour SO₂ standard of 75 ppb (parts per billion [thousand million]) in June 2010. Nonattainment areas have not yet been designated as of 9/2012.

j Secondary standard, set to protect public welfare rather than health. Conformity and environmental analysis address both primary and secondary NAAQS.

k The ARB has identified vinyl chloride and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM₁₀ and, in larger proportion, PM_{2.5}. Both the ARB and U.S. EPA have identified lead and various organic compounds that are precursors to ozone and PM_{2.5} as toxic air contaminants. There are no exposure criteria for adverse health effect due to toxic air contaminants, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

L Lead NAAQS are not considered in Transportation Conformity analysis.

Source: ARB November 2018 (Air Quality Report)

2.13.2.3 State Implementation Plan Status

Nonattainment areas are required by the U.S. EPA to prepare SIPs that demonstrate the date by which the NAAQS may be attained based on existing ambient air quality conditions and opportunities to reduce the regional emissions inventory. Table 2.13-2 presents the status of SIPs related to the project area. As of preparation of this document, the U.S. EPA has not yet set a project area attainment date for the PM_{2.5} NAAQS.

Name/Description	Status				
Carbon Monoxide	Attainment – Maintenance (Serious): Meets NAAQS				
Lead	Attainment – Unclassified: Meets NAAQS				
Nitrogen Dioxide	Attainment – Maintenance: Meets NAAQS				
Ozone (8-hour)	Nonattainment (Extreme): Does not meet NAAQS				
PM10	Maintenance (Serious): Does not meet NAAQS				
PM _{2.5}	Nonattainment (Moderate): Does not meet NAAQS				

Table 2.13-2: Status of SIPs Relevant to the Project A
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Source: U.S. EPA 2018

2.13.2.4 Monitored Air Quality

The California ARB and South Coast Air Quality Management District (SCAQMD) maintain a network of air quality monitoring stations located throughout the South Coast Air Basin to characterize the air quality environment by measuring and recording pollutant concentrations in the local ambient air. The project is located in Orange County with the subject corridor transecting 7.5 miles through portions of the cities of Tustin, Santa Ana, and Orange. The ambient air quality monitoring station active in nearest proximity to the project area is the Anaheim Monitoring Station, situated approximately 6 miles west of the project corridor. Table 2.13-3 presents the most recent ambient air quality monitoring data available at the Anaheim Monitoring Station. The air quality monitoring data for the Anaheim Monitoring Station are consistent with the nonattainment designations, with instances of O₃, PM₁₀, and PM_{2.5} thresholds being exceeded.

Pollutant	Standard	2016	2017	2018					
Ozone									
Max 1-hr concentration		0.103	0.090	0.112					
No. days exceeded: State	0.09 ppm	2	0	1					
Max 8-hr concentration		0.074	0.076	0.071					
No. days exceeded: State	0.070 ppm	4	4	1					
Federal	0.070 ppm	4	4	1					
Carbon Monoxide									
Max 1-hr concentration		3.7	8.4	2.3					
No. days exceeded: State Federal	20 ppm	0	0	0					
Federal	35 ppm	0	0	0					
Max 8-hr concentration	2.2	2.6	1.9						

Table 2.13-3: Recent Air Pollutant Concentrations in the Project Area

Pollutant	Standard	2016	2017	2018				
No. days exceeded: State	9.0 ppm	0	0	0				
Federal	9 ppm	0	0	0				
PM ₁₀		- -	·	• •				
Max 24-hr concentration:		74.0	95.7	94.0				
No. days exceeded: State	50 µg/m³	N/A	N/A	N/A				
Federal	150 µg/m³	0	0	0				
State annual average concentration	N/A	N/A	27.4					
PM _{2.5}								
Max 24-hr concentration		44.4	31.2	63.1				
No. days exceeded: Federal	35 µg/m³	1	7	7				
Max annual concentration		9.4	10.6	11.4				
Exceed Standard: State	12 µg/m³	No	No	No				
Federal	12.0 µg/m³	No	No	No				
Nitrogen Dioxide	Nitrogen Dioxide							
Max 1-hr concentration	0.064	0.081	0.066					
No. days exceeded: State	0.18 ppm	0	0	0				
Federal	0	0	0					
Max annual concentration		0.014	0.014	0.014				

Notes: PM: particulate matter; ppb: parts per billion; ppm: parts per million. Source: U.S. EPA 2019; SCAQMD 2019

2.13.2.5 Sensitive Receptors

Sensitive receptors include residential areas, schools, hospitals, other health care facilities, child/day care facilities, parks, and playgrounds. Residential communities are located along the entirety of the project corridor, and other religious institutions, medical facilities, and educational centers are situated throughout the area that serve these communities. Sensitive land uses within 1,000 feet of the SR 55 corridor are depicted on Figure 2.13-1 (maps 1 through 4).















Figure 2.13-1. Map of Sensitive Land Uses Along the Southern Project Corridor (4 of 4)

2.13.3 Environmental Consequences

2.13.3.1 Regional Conformity

The project is listed in the 2016–2040 financially constrained RTP/SCS which was found by the SCAG to conform on April 7, 2016; and FHWA and FTA made a regional conformity determination finding on June 2, 2016. The project is also included in the SCAG financially constrained 2019 FTIP, page 2 of the Orange County Project Listing for State Highways. The SCAG 2019 FTIP was determined to conform by FHWA and FTA on December 17, 2018. The design concept and scope of the project is consistent with the project description in the 2016–2040 RTP/SCS, 2019 FTIP (SCAG 2018), and the open to traffic assumptions of the SCAG regional emissions analysis.

2.13.3.2 Project-Level Conformity

Carbon Monoxide Hot-Spots Analysis

Caltrans has developed the Transportation Project-Level Carbon Monoxide Protocol (Caltrans 1997) for assessing carbon monoxide impacts of transportation projects. The procedures and guidelines comply with the following regulations without imposing additional requirements: Section 176(c) of the 1990 FCAA Amendments, federal conformity rules, State and local adoptions of the federal conformity rules, and the CEQA requirements [California Code of Regulations Title 21 Section 1509.3(25)]. Two conformity-requirement decision flow charts are provided in the CO Protocol for intersection analyses. The flowcharts are included in Appendix D of the Air Quality Report (November 2018,). An explanatory discussion of the steps used to determine the conformity requirements that apply to the current project is provided below:

<u>Is the project exempt from all emissions analyses?</u> NO. The project is a widening project, which is not exempt from regional emissions analysis per 40 CFR 93.126.

<u>Is the project exempt from regional emissions analysis?</u> NO. The project is a widening project, which is not exempt from regional emissions analysis per 40 CFR 93.127.

<u>Is the project locally defined as regionally significant?</u> YES. The project would increase capacity and is defined as regionally significant.

<u>Is the project in a federal attainment area?</u> NO. The project is located within an attainment/ maintenance area for the federal CO standard as of June 11, 2007.

<u>Is there a currently conforming RTP and FTIP?</u> YES. The 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) was found by SCAG to conform on April 7, 2016; and FHWA and FTA made a regional conformity determination finding on June 2, 2016. The 2019 FTIP was determined to conform on December 17, 2018.

Is the project included in the regional emissions analysis supporting the currently conforming <u>RTP and FTIP?</u> YES. The design concept and scope of the project is consistent with the project description in the 2016-2040 RTP/SCS, 2019 FTIP, and the open to traffic assumptions of the SCAG regional emissions analysis.

Has project design concept and/or scope changed significantly from that in regional analysis? NO. See previous response.

Examine local impacts. Section 3.1.9 of the flowchart directs the project evaluation to Section 4 (Local Analysis) of the CO Protocol.

Assessment of the project's effect on localized ambient air quality is based on analysis of CO. As stated in the CO Protocol, the determination of project-level CO impacts should be carried out according to the local analysis. The following discussion provides explanatory remarks for every step of the local analysis of the CO Protocol (screening methodology):

Is the project in a carbon monoxide nonattainment area? NO. The project site is located in a federal attainment/maintenance area as of June 11, 2007.

Was the area redesignated as "attainment" after the 1990 Clean Air Act? YES. See previous response.

<u>Has "continued attainment" been verified with the local Air District, if appropriate?</u> YES. As shown in Table 2.13-3, above, monitored CO concentrations in the project area were below the NAAQS for the latest three-year period.

<u>Does the project worsen air quality?</u> YES. As discussed below in Section 2.13.3.3, Construction (Short-Term) Impacts, the project would increase regional CO emissions when compared to No Build emissions.

Is the project suspected of resulting in higher CO concentrations than those existing within the region at the time of the attainment demonstration? NO. To answer this question, Section 7.4.2 of the CO Protocol recommends selecting one of the worst-case locations in the region where attainment has been demonstrated and comparing it to the build scenario of the project with a similar configuration. Therefore, the intersection of Wilshire Boulevard and Veteran Avenue from the SCAQMD 2003 Air Quality Management Plan (AQMP) Appendix V attainment demonstration and the intersection of Katella Avenue and Tustin Street were compared to evaluate whether the project would result in higher CO concentrations using the following conditions.

- a. The receptors at the intersection of Katella Avenue and Tustin Street would be the same distance or farther from the traveled roadway than the receptors at the intersection of Wilshire Boulevard and Veteran Avenue for which attainment has been demonstrated. The attainment demonstration evaluated the CO concentrations at a distance of 3 meters (10 feet) from the edge of the roadways. Since the CO Protocol does not permit the modeling of receptor locations closer than 3 meters (10 feet), receptor locations for the project would be the same or farther than the receptors evaluated for the attainment demonstration.
- b. The Katella Avenue and Tustin Street intersection would have lower traffic volumes when compared to the intersection of Wilshire Boulevard and Veteran Avenue. The traffic volumes are presented in Table 2.13-4.

Table 2.13-4: CO Hot-Spot Analysis Stud	ly Intersections Peak Hour Traffic Volumes
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Intersection	West Link Peak-Hour Traffic Volumes	East Link Peak-Hour Traffic Volumes	North Link Peak-Hour Traffic Volumes	South Link Peak-Hour Traffic Volumes	Total Volume
Attainment Demonstration: Wilshire Blvd and Veteran Ave	4,951	3,317	1,400	933	10,601
No Build Alternative (2035): Katella Ave & Tustin St	2,040	1,960	1,860	1,620	7,480
Build Alternative (2035): Katella Ave & Tustin St	2,040	1,990	1,860	1,660	7,550

Notes:

Ave: Avenue; Blvd: Boulevard; St: Street

Source: Orange County Transportation Analysis Model, Version 4.0.; SCAQMD 2003 (AQMP, Appendix V, Modeling and Attainment Demonstrations, page V-4-26)

- c. The worst-case meteorology used for the Katella Avenue and Tustin Street would be identical to the meteorology used for the Wilshire Boulevard and Veteran Avenue intersection in the attainment demonstration. The CAL3QHC model was used for the attainment demonstration. Therefore, if the project were modeled, both intersections would be evaluated using the same meteorology settings in the CAL3QHC model, as the model only has one meteorological data set.
- d. The peak hour traffic volumes presented in Table 2.13-4 show that the peak-hour link volumes for Katella Avenue and Tustin Street would be lower than the traffic volumes at the intersection of Wilshire Boulevard and Veteran Avenue used in the attainment demonstration.
- e. The number of vehicles operating in cold start mode was not available in the attainment demonstration for the Wilshire Boulevard and Veteran Avenue intersection. However, the percentage of vehicles operating during the peak hour in cold start mode for the Katella Avenue and Tustin Street intersection would be expected to be the same or lower than Wilshire Boulevard and Veteran Avenue intersection.
- f. The percentage of heavy-duty gas trucks utilizing the Wilshire Boulevard and Veteran Avenue intersection was not provided in the attainment demonstration from 2003. According to the Orange County Transportation Analysis Model, the percentage of heavy-duty trucks, diesel and gas, utilizing the Katella Avenue and Tustin Street intersection is approximately 2 percent. The majority of heavy-duty trucks are currently powered with diesel fuel and not gasoline. The percentage of heavy-duty gas trucks is less than 2 percent. Importantly, the CO emission rate for diesel engines is substantially less than the CO emission rate for gasoline engines. In addition, what is inherently important in an intersection CO hot-spot analysis is the number of truck trips, not the percentage.

As shown in Table 2.13-4, the peak-hour volume at Katella Avenue and Tustin Street is approximately 3,000 fewer vehicles than the peak-hour volume at Wilshire Boulevard and Veteran Avenue. Given the differences in peak-hour volumes and the low percentage of heavy-duty trucks at the intersection of Katella Avenue and Tustin Street, it can reasonably be concluded that the intersection of Katella Avenue and Tustin Street has less truck volume than was estimated at the intersection of Wilshire Boulevard and Veteran Avenue. Therefore, similar to the attainment demonstration, heavy-duty gas trucks would not contribute to a CO hot-spot.

- g. The average delay and queue length for the Katella Avenue and Tustin Street intersection would be expected to be the same or less than the Wilshire Boulevard and Veteran Avenue intersection used for the attainment demonstration. The LOS for the Wilshire Boulevard and Veteran Avenue intersection used for the attainment demonstration was not listed; however, based on the traffic volumes and intersection geometry, the intersection was likely LOS F. The Katella Avenue and Tustin Street intersection would function at LOS D or F depending on the peak hour. However, this intersection has lower volumes than the Wilshire Boulevard and Veteran Avenue intersection.
- h. The background concentrations of CO in the project area are lower than the CO concentrations used in the attainment demonstration for the intersection of Wilshire Boulevard and Veteran Avenue, as shown in Table 2.13-5.
- i. The maximum background 1- and 8-hour CO concentrations in the project area were 8.4 and 2.6 parts per million (ppm) in 2017. These concentrations are lower than the background concentrations used for the attainment demonstration which were predicted to be 10.8 ppm for the 1-hour measurements and 9.9 ppm for the 8-hour measurements for the year 2002, as shown in Table 2.13-5.

The evaluation of the above conditions has shown that the Katella Avenue and Tustin Street intersection would not be expected to result in higher CO concentrations than the Wilshire Boulevard and Veteran Avenue intersection used for the attainment demonstrations. In addition, the SCAQMD 2003 AQMP Appendix V attainment demonstration indicated that in 1997 and 2002, 1-hour CO concentrations were considerably lower than the NAAQS and CAAQS (Table 2.13-5). The analysis was based on 1997 and 2002 traffic volumes and showed 38 to 45 percent reduction in concentrations between the two years.

Table 2.13-5 presents maximum CO concentrations in the attainment demonstration and in the project area. The assessment demonstrates that the project would not create a CO hot-spot at any intersections in the vicinity of the alignment.

Year & Location	Morning	Afternoon	Peak	Standard	Maximum One-Hour CO Concentration In the Project Area (2015–2017)
1997 Wilshire Blvd - Veteran Ave	7.7	5.7	-	35	3.1
1997 Sunset Blvd - Highland Ave	6.9	7.3	-	35	3.1
1997 La Cienega Blvd - Century Blvd	6.4	5.2	-	35	3.1
1997 Long Beach Blvd - Imperial Hwy	5.1	5.2	2.2	35	3.1
2002 Wilshire Blvd - Veteran Ave	4.6	3.5	-	35	3.1
2002 Sunset Blvd - Highland Ave	4.0	4.5	-	35	3.1
2002 La Cienega Blvd - Century Blvd	3.7	3.1	-	35	3.1
2002 Long Beach Blvd - Imperial Hwy	3.0	3.1	1.2	35	3.1

Table 2.13-5: Average 1-Hour Carbon Monoxide Concentrations in PPM in the Attainment Demonstration and in the Project Area

Notes: Ave: Avenue; Blvd: Boulevard; CO: carbon monoxide; Hwy: Highway

Source: SCAQMD 2003 (AQMP, Appendix V, Modeling and Attainment Demonstrations, V-4-25 and pages V-4-26)
Therefore, according to the CO Protocol, the project is satisfactory, and no further analysis is needed. The project would not be expected to create a CO hot-spot; therefore, the project has demonstrated project level conformity for CO and will not directly impact or indirectly affect CO concentration levels.

Particulate Matter Hot-Spots Analysis

In November 2015, the U.S. EPA released an updated version of Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas for quantifying the local air quality impacts of transportation projects and comparing them to the PM NAAQS (75 Federal Register (FR) 79370). The guidance document requires a hot-spot analysis to be completed for a POAQC. The final rule in 40 CFR 93.123(b)(1) defines a POAQC as:

- i. New or expanded highway projects that have a significant number of or significant increase in diesel vehicles
- ii. Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project
- iii. New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location
- iv. Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location
- v. Projects in or affecting locations, areas, or categories of sites which are identified in the PM_{2.5} and PM₁₀ applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation

The proposed project was submitted to stakeholders at the TCWG meeting on May 22, 2018, pursuant to the Interagency Consultation requirement of 40 CFR 93.105 (c)(1)(i). U.S. EPA, FHWA, Caltrans, California ARB, SCAQMD, and other interagency consultation participants concurred that the project is not a POAQC under 40 CFR 93.123(b)(1) regarding POAQC determination. The project is not considered a POAQC because it does not meet the definition as defined in U.S. EPA's Transportation Conformity Guidance (see TCWG meeting Notes in Appendix F of the Air Quality Report [November 2018]). Therefore, PM hot-spot analysis is not required. The Interagency Consultation documents may be referenced in the Air Quality Assessment Report (November 2018, updated 2019).

An Air Quality Conformity Analysis (November 2019) was prepared for this project and was transmitted to FHWA on January 27, 2020, following the conclusion of the public review period for the environmental document and PDT identification of the Preferred Alternative. On February 25, 2020, FHWA issued the Project Level Conformity Determination that SR 55 Improvement Project (I-5 to SR 91) conforms with the SIP in accordance with 40 CFR Part 93 (See Appendix F for a record of the correspondence).

2.13.3.3 Construction (Short-Term) Impacts

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and other construction-related activities. Emissions from construction equipment also are expected and would include CO, NOx, VOCs, directly-emitted particulate matter (PM₁₀ and PM_{2.5}), and toxic air contaminants such as diesel exhaust particulate matter. Ozone is a regional pollutant that is derived from NOx and VOCs in the presence of sunlight and heat. The short-term construction emissions would have temporary direct effects on air quality.

Site preparation and roadway construction typically involves clearing; cut-and-fill activities; grading, removing, or improving existing roadways; building bridges; and paving roadway surfaces. Construction-related effects on air quality from most highway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. These activities could temporarily generate enough PM₁₀ and PM_{2.5} and small amounts of CO, SO₂, NOx, and VOCs to be of concern. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site could deposit mud on local streets, which could indirectly affect air quality by contributing to airborne dust after it dries. PM₁₀ emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM₁₀ emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of equipment in operation. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site, thus potentially indirectly affecting air quality.

Construction activities for large development projects are estimated by the U.S. EPA to add 1.2 tons of fugitive dust per acre of soil disturbed per month of activity. If water or other soil stabilizers are used to control dust, the emissions can be reduced by up to 50 percent. The Department's Standard Specifications, Section 14 (Caltrans 2015d) on dust minimization requires use of water or dust palliative compounds and will reduce potential fugitive dust emissions during construction.

In addition to dust-related PM₁₀ emissions, heavy-duty trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO₂, NOx, VOCs, and some soot particulate (PM₁₀ and PM_{2.5}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

SO₂ is generated by oxidation during combustion of organic sulfur compounds contained in diesel fuel. Under California law and ARB regulations, off-road diesel fuel used in California must meet the same sulfur and other standards as on-road diesel fuel (not more than 15 ppm sulfur), so SO₂-related issues due to diesel exhaust will be minimal.

Some phases of construction, particularly asphalt paving, may directly impact surrounding residents and traveling motorists by resulting in short-term odors in the immediate area of each paving site(s). Such odors would quickly disperse to below detectable levels as distance from the site(s) increases.

Most of the construction impacts to air quality are short-term in duration and, therefore, will not result in long-term adverse conditions. Construction emissions were estimated using the latest Sacramento Metropolitan Air Quality Management District's Roadway Construction Emissions Model. While the model was developed for Sacramento conditions in terms of fleet emission factors, silt loading, and other model assumptions, it is considered adequate for estimating road construction emissions by the SCAQMD (in its CEQA guidance) and is used for that purpose in this analysis.

Construction emissions were estimated for the Build Alternative using detailed equipment inventories and construction scheduling information provided by the engineering team combined with emissions factors from the EMFAC2014 and OFFROAD models. Construction-related emissions for the Build Alternative are presented in Table 2.13-6. The results of the construction emission calculations are included on page one of Appendix C in the Air Quality Assessment Report. The emissions presented are based on the best information available at the time of calculations. The emissions represent the peak daily construction emissions that would be generated from the Build Alternative.

Phase	PM₁₀ (Ibs/day)	PM _{2.5} (Ibs/day)	CO (Ibs/day)	NO _x (Ibs/day)	CO ₂ (tons/day)
Grubbing/Land Clearing	61.2	13.5	25.9	25.4	3.6
Grading/Excavation	63.7	15.7	77.2	78.1	8.6
Drainage/Utilities/Sub-Grade	62.2	14.4	59.1	46.7	5.7
Paving	1.3	1.1	40.8	24.8	3.9
Maximum Daily Emissions	63.7	15.7	77.2	78.1	8.6

Table 2.13-6: Maximum Daily Emissions Generated by Construction Activities

Notes: lbs/day: pounds per day

Source: Sacramento Metropolitan Air Quality Management District March 2019

Furthermore, implementation of the following Project Features, some of which may also be required for other purposes such as stormwater pollution control, will further reduce any direct and indirect air quality impacts resulting from construction activities:

PF-AQ-1: The construction contractor must comply with the Caltrans' Standard Specifications in Section 14-9 (2015).

Section 14-9-02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.

- **PF-AQ-2**: Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low-sulfur fuel as required by California Code of Regulations Title 17, Section 93114. Heavy-duty vehicles with a Gross Vehicle Weight Rating of 10,000 pounds or heavier will be prohibited from idling more than 5 minutes per regulations established by the Air Resources Board.
- **PF-AQ-3**: The construction contractor must comply with all SCAQMD rules, including Rule 402 (Nuisance) and Rule 403 (Fugitive Dust). Compliance with Rule 403

mandates several dust control measures, including, but not limited to, watering, track out reduction measures, sweeping, and covering stockpiles.

2.13.3.4 Long-Term (Operational) Effects – Criteria Pollutants and Ozone Precursors Emissions

Operational emissions take into account long-term changes in emissions due to the project (excluding the construction phase). The operational emissions analysis compares forecasted emissions for Existing/Baseline conditions, No Build, and Build Alternatives. Regional operational emissions associated with project implementation were calculated using CT-EMFAC2014 (Caltrans 2014b). CT-EMFAC2014 is the most recent on-road emissions modeling tool in California that has been approved for use by the U.S. EPA. CT-EMFAC2014 contains a comprehensive emissions inventory of motor vehicles that provides estimated emission rates for air pollutants. Refer to the Air Quality Assessment Report (November 2018, updated 2019) for a comprehensive discussion of the detailed traffic data and emissions calculation methodology.

Mobile source emissions in the project corridor were estimated for exhaust, brake wear, tire wear, and re-entrained dust. Emissions were estimated using project-specific traffic data, CT-EMFAC (version 6.0), and U.S. EPA guidance for re-entrained dust. For exhaust emissions, the emissions factors generated by the CT-EMFAC modeling software are expressed in units of grams of pollutant emitted per mile traveled (g/mi) and are associated with a vehicle type traveling at a given speed. The raw traffic data files contained traffic volume data for non-trucks and trucks during four time periods of the day as shown below:

•	Morning (AM)	(6:00 a.m. to 9:00 a.m.)	3 hours
•	Midday (MD)	(9:00 a.m. to 3:00 p.m.)	6 hours
•	Afternoon (PM)	(3:00 p.m. to 7:00 p.m.)	4 hours
•	Nighttime (NT)	(7:00 p.m. to 6:00 a.m.)	11 hours

The data for all time periods were compiled into a single large spreadsheet for efficient data management and analysis. The traffic data files divided the 7.5-mile project corridor into individual link segments of varying lengths for mainline lanes, HOV lanes, and on/off-ramps. For each individual link segment, non-truck and truck volumes were provided in the traffic data files during each of the four time periods for Existing Conditions in 2017, the No Build Alternative in 2035 and 2055, and the Build Alternative in 2035 and 2055. The traffic data files also included descriptions of the link segments, the lengths of the link segments, and the average speeds of non-trucks and trucks over each segment during the associated time period.

The following equation was used to estimate emissions of air pollutants from non-trucks and trucks over each link segment during each period of the day, for each alternative scenario in each analysis year. The conversion factor is 453.592 grams per pound.

$$E_{Si} = \frac{L_S \times \left[(V_{NT} \times EF_{NT-Si}) + (V_T \times EF_{T-Si}) \right]}{453.592}$$

Where the variables represent the following:

- Esi: The emissions of air pollutant i in pounds (lbs) from the link segment during the time period;
- Ls: The length of the individual link segment in miles (mi) from the traffic data;
- V_{NT}: The volume of non-trucks traveling over the link segment during the period;
- EF_{NT-Si}: The CT-EMFAC non-trucks emission factor in grams per mile (g/mi) for pollutant i at the link segment non-truck speed from the traffic data;
- V_T: The volume of trucks traveling over the link segment during the period;
- EF_{T-Si}: The CT-EMFAC trucks emission factor in grams per mile (g/mi) for pollutant i at the link segment truck speed from the traffic data.

The equation produces the sum of emissions of air pollutant i in pounds from non-trucks and trucks traveling over the individual link segment during the specific period. To calculate daily emissions of each air pollutant under each scenario, the regional air quality analysis summed the emissions from all individual link segments for the four periods of the day. Daily emissions were calculated for criteria pollutants and ozone precursors.

An example calculation is provided below that was used to quantify CO emissions from the northbound (NB) link segment "Between Irvine Blvd On-Ramp and 17th St Off-Ramp" during the morning period in Baseline 2017. In the "Regional Emissions Calculation Worksheet" Appendix file in Appendix E of the Air Quality Report, this segment is denoted with the Link ID 19609 and the data described is for the "Mainline" segment. The length of this link segment is 0.5 mile, and the average speed for non-trucks and trucks provided in the traffic data was 45 mph. The CT-EMFAC exhaust CO emission factors in the following equation were extracted for non-trucks and trucks traveling at 45 mph in 2017.

$$24.18^{a} \ lb = \frac{0.5^{b} \ miles \times \left[(21,147^{c} \ NT \times 0.983^{d} \ g/mi) + (1,753^{e} \ T \ \times \ 0.844^{f} \ g/mi)\right]}{453.592 \left(\frac{g}{lb}\right)}$$

a: This value can be found on page 6 of 295 in Appendix E of the Air Quality Report.

- b: This value can be found on page 4 of 295 in Appendix E of the Air Quality Report.
- c: This value can be found on page 5 of 295 in Appendix E of the Air Quality Report.
- d: This value can be found on page 292 of 295 in Appendix E of the Air Quality Report.
- e: This value can be found on page 5 of 295 in Appendix E of the Air Quality Report.
- f: This value can be found on page 292 of 295 in Appendix E of the Air Quality Report.

Table 2.13-7 shows emissions in the existing condition and 2035 and 2055 for the No Build and Build Alternatives. Except for particulate matter, emissions decrease in 2035 and 2055 compared to the existing condition primarily due to fleet turnover and improvements in exhaust controls. The particulate matter emissions are predominantly attributed to brake and tire wear and re-

entrained dust, which are directly correlated to increases in regional vehicle miles traveled (VMT). When compared to the No Build Alternative, the Build Alternative would result in slight reductions in daily criteria pollutant emissions due to improved traffic flow, excluding PM_{10} and $PM_{2.5}$. The marginal increases in regional particulate matter emissions are directly attributed to brake and tire wear and re-entrained road dust. The marginal increase in regional particulate matter emissions does not reflect a deterioration of traffic conditions throughout the project corridor as a result of implementation of the Build Alternative.

Scenario/Analysis Year	VOC (Ibs/day)	CO (Ibs/day)	PM₁₀ (Ibs/day)	PM _{2.5} (Ibs/day)	NOx (surrogate for NO₂) (lbs/day)
Baseline 2017	169.5	4,467.3	572.0	188.9	1,239.9
No Build Alternative 2035	80.8	1,848.8	595.9	188.3	264.8
Build Alternative 2035	79.6	1,837.0	594.1	187.8	261.3
No Build Alternative 2055	81.5	1,750.8	647.5	203.6	217.1
Build Alternative 2055	81.4	1,754.9	651.6	204.9	215.0

Table 2.13-7: Summary of Comparative Emissions Analysis

Notes: CO: carbon monoxide; lbs/day: pounds per day; NOx: nitrogen oxides; PM10: particulate matter less than 10 microns in diameter; PM2.5: fine particulate matter less than 2.5 microns in diameter; VOC: volatile organic compound Source: Caltrans 2014b

Nitrogen Dioxide Concentrations

The U.S. EPA modified the NO₂ NAAQS to include a 1-hour standard of 100 parts per billion (ppb) in 2010. Currently there is no federal project-level NO₂ analysis requirement. However, NO₂ is among the near-road pollutants of concern, and project analysts will be expected to explain how transportation projects affect near-road NO₂.

Regionally, the project is in an NO₂ Attainment – Maintenance (Primary) area and included in the conforming RTP/SCS and 2019 FTIP. For project-level analysis, NO₂ assessment protocol is not available. Neither EMFAC nor CT-EMFAC provides NO₂ emissions estimates. Instead, those models provide NO_x (combination of NO and NO₂) emissions estimates. Near-road NO₂ concentrations will likely be dominated by overall NO_x emissions. As long as ozone is present at relatively low (background) concentrations, most of the directly emitted NO will convert to NO₂ within a few seconds. Therefore, NO_x emissions overall can serve as a useful analysis surrogate for NO₂. The Caltrans Near-Road Nitrogen Dioxide Assessment report can be used as a reference (Caltrans 2012b).

Table 2.13-7 shows NO_X emissions for existing, No Build Alternative, and Build Alternative conditions. Emissions decrease in 2035 and 2055 compared to the existing condition primarily due to fleet turnover and improvements in exhaust controls. When compared to the No Build Alternative, the Build Alternative would result in slight reductions in NO_X emissions due to improved traffic flow and decreased congestion.

2.13.3.5 Mobile Source Air Toxics

FHWA released updated guidance in October 2016 (FHWA 2016) for determining when and how to address impacts of mobile source air toxics (MSAT) in the NEPA process for transportation projects. FHWA identified three levels of analysis:

- No analysis for exempt projects or projects with no potential for meaningful MSAT effects
- Qualitative analysis for projects with low potential MSAT effects
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects

Projects with no impacts generally include those that (a) qualify as a categorical exclusion under 23 CFR 771.117, (b) qualify as exempt under the FCAA conformity rule under 40 CFR 93.126, and (c) are not exempt but have no meaningful impacts on traffic volumes or vehicle mix.

Projects that have low potential MSAT effects are those that serve to improve highway, transit, or freight operations or movement without adding substantial new capacity or creating a facility that is likely to substantially increase emissions. The large majority of projects fall into this category.

Projects with high potential MSAT effects include those that:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of Diesel Particulate Matter in a single location; or
- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000, or greater, by the design year; and
- Are proposed to be located in proximity to populated areas or, in rural areas, in proximity to concentrations of vulnerable populations (i.e., schools, nursing homes, hospitals).

The multi-directional AADT in 2055 would be above the 140,000 benchmark value for a quantitative analysis. Based on the FHWA guidance, the project has the potential for meaningful differences in MSAT emissions; therefore, level of emissions for the highest priority MSATs for the No Build Alternative and Build Alternative was evaluated (Level 3 Analysis: Projects with Higher Potential MSAT Effects).

The latest version of CT-EMFAC (CT-EMFAC2014 v6.0, released May 2017) was used to estimate daily emissions of benzene, 1,3-butadiene, formaldehyde, acrolein, naphthalene, diesel particulate matter (DPM), and polycyclic organic matter (POM). MSAT emissions were estimated for Baseline, No Build, and Build Alternatives for the opening year (2035) and horizon year (2055) using CT-EMFAC.

The modeling results for the Baseline, No Build, and Build Alternatives are presented in Table 2.13-8. Relative to existing conditions in the Baseline, emissions of all MSAT compounds decrease in Construction Year 2035 and Design Year 2055. This trend is generally attributed to fleet turnover and improvements in fuel combustion technology. Between the No Build and

Build Alternatives, emissions of all MSAT compounds decrease with implementation of the Build Alternative. The difference in daily MSAT emissions between the No Build and Build Alternatives results from higher average speeds associated with the alleviation of congestion throughout the project corridor.

Scenario/ Analysis Year	1,3- butadiene (Ibs/day)	Acetaldehyde (lbs/day)	Acrolein (Ibs/day)	Benzene (Ibs/day)	Diesel PM (Ibs/day)	Formaldehyde (Ibs/day)	Naphthalene (Ibs/day)	Polycyclic Organic Matter (Ibs/day)
Baseline (2017)	1.21	3.54	0.27	5.69	11.11	8.95	0.16	0.25
No Build (2035)	0.58	1.64	0.13	2.69	1.45	4.15	0.08	0.10
Build Alternative (2035)	0.57	1.60	0.12	2.65	1.53	4.06	0.08	0.10
No Build Alternative (2055)	0.58	1.64	0.13	2.71	1.26	4.14	0.08	0.09
Build Alternative (2055)	0.59	1.61	0.13	2.71	1.25	4.10	0.08	0.09

Table 2.13-8: Summary of Comparative MSAT Emissions Analysis

Source: Caltrans 2014b

Construction Conformity

The construction period is planned to last approximately three years. Construction activities will not last for more than five years at one general location, so construction-related emissions do not need to be included in regional and project-level conformity analysis (40 CFR 93.123(c)(5)). Emissions from construction-related activities are thus considered temporary as defined in 40 CFR 93.123(c)(5) and are not required to be included in PM hot-spot analyses to meet conformity requirements. Construction activities are not anticipated to have permanent direct or indirect impacts on air quality.

Naturally Occurring Asbestos and Structural Asbestos

Naturally occurring asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. The State Department of Conservation, in conjunction with the United States Geological Survey, has prepared a map and spreadsheet inventory of asbestos areas and areas known to contain serpentinite and ultramafic rocks. The locations of the identified deposits were examined, and it was determined that the project is not in an area containing naturally occurring asbestos. Standard dust control measures such as watering would effectively control unanticipated naturally occurring asbestos (NOA) exposure.

Demolition activities would be subject to SCAQMD Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities). Rule 1403 is intended to limit asbestos emissions and the associated disturbance of asbestos-containing waste material generated or handled during these activities. The rule addresses the national emissions standards for asbestos along with some additional requirements. The rule requires a survey for asbestos-containing material to be

conducted prior to any renovation or demolition activity and that the lead agency and its contractors notify SCAQMD of any identified asbestos containing material. This notification includes a description of structures and methods utilized to determine whether asbestos-containing materials are potentially present.

All asbestos-containing material found on the site must be removed prior to demolition or renovation activity in accordance with SCAQMD Rule 1403, including specific requirements for surveying, notification, removal, and disposal of material containing asbestos. Therefore, projects that comply with Rule 1403 would ensure that asbestos-containing materials would be disposed of appropriately and safely, thus not directly or indirectly affecting air quality. In addition, construction activities would be completed by asbestos-certified contracts per Caltrans standards.

Lead

Lead is normally not an air quality issue for transportation projects unless the project involves disturbance of soils containing high levels of aerially deposited lead or painting or modification of structures with lead-based coatings. No industrial sources of lead emissions have been identified near the project site. Regardless, soils will be tested for the presence of hazardous materials such as lead. If lead is present, the project would be required to develop a Lead Compliance Plan to minimize exposure per SCAQMD rules and regulations.

2.13.4 Avoidance, Minimization, and/or Mitigation Measures

The project would implement Caltrans standard Project Features, as noted above. The project would also comply with SCAQMD rules, including Rule 403, related for fugitive dust control. The Caltrans standard Project Features and SCAQMD rules ensure that there will be no permanent direct or indirect impacts on air quality due to construction activities. No other minimization measures have been identified as necessary to reduce construction emissions.

2.13.4.1 Climate Change

Neither the U.S. EPA nor the FHWA has issued explicit guidance or methods to conduct projectlevel greenhouse gas analysis. FHWA emphasizes concepts of resilience and sustainability in highway planning, project development, design, operations, and maintenance. Because requirements have been set forth in California legislation and executive orders on climate change, the issue is addressed in the CEQA chapter of this document. The CEQA analysis may be used to inform the NEPA determination for the project. Refer to Section 3.2 for the CEQA discussion of potential climate change impacts.

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2.14 Noise

2.14.1 Regulatory Setting

The NEPA of 1969 and the CEQA provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

2.14.1.1 California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. The rest of this section will focus on the NEPA/23 CFR Part 772 (23 CFR 772) noise analysis; please see Chapter 3 of this document for further information on noise analysis under CEQA.

2.14.1.2 National Environmental Policy Act and 23 CFR 772

For highway transportation projects with the FHWA involvement (and the Department, as assigned), the Federal-Aid Highway Act of 1970 and its implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 A-weighted decibels [dBA]) are lower than the NAC for commercial areas (72 dBA). Table 2.14-1 lists the noise abatement criteria for use in the NEPA/23 CFR 772 analysis.

Figure 2.14-1 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

According to The Department's *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects May 2011*, a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be considered for this project.

The Department's Traffic Noise Analysis Protocol sets forth the criteria for determining when an abatement measure is feasible and reasonable. For noise abatement to be considered acoustically feasible, it must be predicted to provide at least 5 dBA minimum reduction at an impacted receptor. Other considerations include topography, access requirements, other noise sources, and safety considerations. Additionally, noise abatement must achieve design goal of at least 7 dBA noise

reduction at one or more benefited receptors. The overall reasonableness of noise abatement is determined by the noise reduction design goal, the cost of noise abatement and the viewpoints of benefited receptors (including property owners and residents of the benefited receptors).

Activity Category	Activity L _{eq} (h) ¹	Evaluation Location	Description of Activities
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B2	67	Exterior	Residential.
C2	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands properties, or activities not included in A, B, C, D, or F.
F	NA	NA	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	NA	NA	Undeveloped lands that are not permitted.

Table 2.14-1: Activity Categories and Noise Abatement Criteria

Source: Federal Highway Administration. Title 23, Part 772 of the Code of Federal Regulations. NA: not applicable

¹ The L_{eq}(h) activity criteria values are for impact determination only and are not design standards for noise abatement measures. All values are in A-weighted decibels.

² Includes undeveloped lands permitted for this activity category.

L_{eq}(h): equivalent continuous sound level per hour



Source: Table 2-5, Technical Noise Supplement (Caltrans 2013c). Caltrans: California Department of Transportation; dBA: A-weighted decibels; ft: feet; km: kilometer(s); mph: miles per hour

Figure 2.14-1. Noise Levels of Common Activities

2.14.2 Affected Environment

This section is based on the September 2018 Noise Study Report (NSR) and the November 2018 Noise Abatement Decision Report (NADR) prepared for the proposed project. The NSR followed the Caltrans May 2011 Traffic Noise Analysis Protocol.

2.14.2.1 Surrounding Land Use and Receptors

Developed and undeveloped land uses in the project vicinity were identified through land use maps, aerial photography, and site inspection. Receptors were identified within each land use category. Existing land uses in the project area include single- and multifamily residences, pools associated with multifamily residences, churches, playgrounds associated with churches, a classroom associated with a church, hospitals, restaurants, gas stations, a park, a maintenance facility, vacant land, offices, and commercial and retail uses. The following describes in further detail existing land uses in the project area:

- Southbound side of SR 55 between First Street and 4th Street: Land uses in this area include restaurants, offices, and a gas station. Land uses in this area are 18 to 21 feet higher in elevation than SR 55. Currently, no existing walls shield these uses from traffic noise generated by SR 55. The restaurants with outdoor seating areas were evaluated under Activity Category E, which has an exterior NAC of 72 dBA L_{eq}. The restaurant and offices that have no outdoor frequent human use areas were evaluated under Activity Category E for reporting purposes. The gas station was classified under Activity Category F for reporting purposes.
- Northbound side of SR 55 between First Street and Irvine Boulevard: Land uses in this area include multifamily residences, a hospital, and offices. Land uses in this area are 18 to 20 feet higher in elevation than SR 55. Currently, no existing walls shield these uses from traffic noise generated by SR 55. The multifamily residences were evaluated under Activity Category B, which has an exterior NAC of 67 dBA Leq. The interior areas of the hospital buildings were evaluated under Activity Category D, which has an interior NAC of 52 dBA Leq. The offices have no outdoor frequent human use areas and, therefore, were classified under Activity Category E for reporting purposes.
- Southbound side of SR 55 between 4th Street and 17th Street: Land uses in this area include multifamily residences, a pool associated with the multifamily residences, a hospital, restaurants, offices, commercial, retail, and a gas station. Land uses in this area are 17 to 24 feet higher in elevation than SR 55. Currently, a 4- to 4.5-foot-high existing wall shields the hospital from traffic noise. An existing 6-foot wall shields one of the office buildings. The multifamily residences were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq}. The pool associated with the multifamily residences was evaluated under Activity Category C, which has an exterior NAC of 67 dBA L_{eq}. The offices and restaurants with outdoor seating were evaluated under Activity Category E, which has an exterior NAC of 72 dBA L_{eq}. The offices and restaurants that have no outdoor frequent human use areas were classified under Activity Category E for reporting purposes. The interior areas of the hospital buildings were evaluated under Activity Category D, which has an interior NAC of 52 dBA L_{eq}. Commercial, retail uses, and the gas station were classified under Activity Category F for reporting purposes.
- Northbound side of SR 55 between Irvine Boulevard and 17th Street: Land uses in this area include single-family residences, offices, and a gas station. Land uses in this area are 16 to 21 feet higher in elevation than SR 55. Currently, an 8.5- to 10.5-foot-high existing wall shields the residences from traffic noise. Existing 4- to 6.5-foot-high walls shield some of the offices from traffic noise. The single-family residences were evaluated under Activity Category B, which has an exterior NAC of 67 dBA Leq. The offices have no outdoor frequent human use areas and, therefore, were classified under Activity Category F for reporting purposes.
- Southbound side of SR 55 between 17th Street and Santa Clara Avenue: Land uses in this area include single-family residences and offices. Land uses in this area range from 1 foot lower in elevation to 19 feet higher in elevation than SR 55. Currently, a 9.5to 13.5-foot-high wall shields the residences from traffic noise. The single-family residences were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq}. The offices have no outdoor frequent human use areas and, therefore, were classified under Activity Category E for reporting purposes.

- Northbound side of SR 55 between 17th Street and Santa Clara Avenue: Land uses in this area include single-family residences, restaurants, commercial, retail, and a gas station. Land uses in this area range from 3 feet lower in elevation to 15 feet higher in elevation than SR 55. Currently, a 16-foot-high existing wall shields the residences from traffic noise. The single-family residences were evaluated under Activity Category B, which has an exterior NAC of 67 dBA Leq. The restaurants with outdoor seating were evaluated under Activity Category E, which has an exterior NAC of 72 dBA Leq. The restaurants that have no outdoor frequent human use areas were classified under Activity Category E for reporting purposes. The offices have no outdoor frequent human use areas and, therefore, were classified under Activity Category E for reporting purposes. The commercial, retail, and gas station were classified under Activity Category F for reporting purposes.
- Southbound side of SR 55 between Santa Clara Avenue and Fairhaven Avenue: Land uses in this area include single- and multifamily residences and a pool associated with the multifamily residences. Land uses in this area range from 6 feet lower in elevation to 3 feet higher in elevation than SR 55. Currently, 13.5- to 16-foot existing walls shield these residences from traffic noise. The single- and multifamily residences were evaluated under Activity Category B, which has an exterior NAC of 67 dBA Leq. The pool associated with the multifamily residences was evaluated under Activity Category C, which has an exterior NAC of 67 dBA Leq.
- Northbound side of SR 55 between Santa Clara Avenue and Fairhaven Avenue: Land uses in this area include single-family residences. Land uses in this area range from4 feet lower in elevation to 6 feet higher in elevation than SR 55. Currently, a 14.5to 16.5-foot-high existing wall shields these residences from traffic noise. The height of a section of this wall includes a portion of the wall that functions as a retaining wall. The single-family residences were evaluated under Activity Category B, which has an exterior NAC of 67 dBA Leq.
- Southbound side of SR 55 between Fairhaven Avenue and SR 22: Land uses in this area include multifamily residences and a maintenance facility. Land uses in this area range from 7 feet lower in elevation to 1 foot higher in elevation than SR 55. Currently, 9.5- to 14.5-foot existing walls shield the residences from traffic noise. An existing 4.5- to 7.5-foot existing wall shields the maintenance facility from traffic noise. The multifamily residences were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq}. The maintenance facility was classified as Activity Category F for reporting purposes.
- Northbound side of SR 55 between Fairhaven Avenue and SR 22: Land uses in this area include single-family residences, a church, a playground associated with the church, and classrooms associated with the church. Land uses in this area are 2 to 6 feet lower than SR 55. Currently, a 9- to 11.5-foot-high existing wall shields these uses from traffic noise. The single-family residences were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq}. The playground associated with the church was evaluated under Activity Category C, which has an exterior NAC of 67 dBA L_{eq}. The interior areas of the church and the classrooms associated with the church were evaluated under Activity Category D, which has an interior NAC of 52 dBA L_{eq}.

- Southbound side of SR 55 near Katella Avenue Ramps: Land uses in this area include multifamily residences, commercial, retail, and gas stations. Land uses in this area are 18 to 29 feet lower in elevation than SR 55. Currently, a 16- to 20-foot wall shields some of the residences from traffic noise. The height of this wall includes a portion of the wall that functions as a retaining wall. The multifamily residences were evaluated under Activity Category B, which has an exterior NAC of 67 dBA Leq. The commercial, retail, and gas stations were classified under Activity Category F for reporting purposes.
- Southbound side of SR 55 near Lincoln Avenue: Land uses in this area include singlefamily residences, a park, restaurants, offices, commercial, retail, and a gas station. Land uses in this area range from 41 feet lower in elevation to 65 feet higher in elevation than SR 55. Currently, 5.5- to 7-foot walls shield some of the residence uses from traffic noise. The single-family residences were evaluated under Activity Category B, which has an exterior NAC of 67 dBA Leq. Areas of frequent human use in the park were evaluated under Activity Category C, which has an exterior NAC of 67 dBA Leq. Areas of the park that have no frequent human use areas were classified under Activity Category C for reporting purposes. The restaurant and offices with outdoor seating were evaluated under Activity Category E, which has an exterior NAC of 72 dBA Leq. The restaurant with no outdoor frequent human use areas was classified under Activity Category E for reporting purposes. The commercial, retail, and gas station were classified under Activity Category E for reporting purposes.
- Northbound side of SR 55 near Lincoln Avenue: Land uses in this area include singlefamily residences, a church, a playground associated with the church, restaurants, offices, commercial, retail, a gas station, and vacant land. Land uses in this area range from 3 feet lower in elevation to 90 feet higher in elevation than SR 55. Currently, 4- to 6.5-foot walls shield some of the residence uses from traffic noise The single-family residences were evaluated under Activity Category B, which has an exterior NAC of 67 dBA Leq. The playground associated with the church was evaluated under Activity Category C, which has an exterior NAC of 67 dBA Leq. The interior area of the church was evaluated under Activity Category D, which has an interior NAC of 52 dBA Leq. The restaurants and offices have no outdoor frequent human use areas and, therefore, were classified under Activity Category E for reporting purposes. The commercial, retail, and gas station were classified under Activity Category G for reporting purposes.

2.14.2.2 Exiting Noise Level Measurements

The existing noise environment in the Study Area is described below based on short- and long-term noise monitoring that was conducted at representative receptor locations.

Short Term Monitoring

The primary source of noise in the project area is traffic on SR 55. In some portions of the project area, secondary sources of noise include traffic on SR 22, First Street, 4th Street/Irvine Boulevard, 17th Street, Santa Clara Avenue, Fairhaven Avenue, Katella Avenue, Lincoln Avenue, Nohl Ranch Road, Tustin Street, Santiago Boulevard, and/or Yorba Street. Short-term (15-minute) exterior noise measurements were conducted to document existing noise levels at 57

representative receptor locations¹ in the project area. Short-term noise level measurements were conducted using Larson Davis Models 831, 824, 820 Type 1 sound level meters. Table 2.14-2 contains the results of the short-term noise level measurements and a description of the noise monitoring locations. These short-term noise measurements were used to calibrate the noise model and the locations were used as representative modeling locations. A total of 327 receptors were modeled in the project area.

Figure 2.14-9 shows the short-term monitoring locations. Table 2.14-3 shows the meteorological conditions during the short-term noise measurements. All short-term noise monitoring locations are shown on Figure 2.14-9.

Long-Term Monitoring

Long-term traffic noise level measurements were conducted to document the peak traffic noise hour. Long-term ambient noise monitoring was conducted using five dosimeters and a Larson Davis Model 720 Type 2 sound level meter at seven representative locations in the project area.

Figure 2.14-9 shows the long-term noise monitoring locations. Table 2.14-4 through Table 2.14-10 contain the results of the long-term noise measurements, which are summarized below.

- The long-term noise level measurement at LT-1 was performed at 17272 Amaganset Way from 9:00 a.m. on Wednesday, February 28, 2018, to 9:00 a.m. on Thursday, February 29, 2018. Table 2.14-4 shows that traffic noise peaks during the 11:00 a.m., 12:00 p.m., 1:00 p.m., 2:00 p.m., and 3:00 p.m. hours at LT-1.
- The long-term noise level measurement at LT-2 was performed at 14291 Yorba Street from 7:00 p.m. on Tuesday, April 24, 2018, to 7:00 p.m. on Wednesday, April 25, 2018. Table 2.14-5 shows that traffic noise peaks during the 9:00 a.m., 10:00 a.m., 11:00 a.m., 12:00 p.m., 1:00 p.m., and 2:00 p.m. hours at LT-2.
- The long-term noise level measurement at LT-3 was performed at 13702 Marshall Lane from 10:00 a.m. on Tuesday, March 6, 2018, to 10:00 a.m. on Wednesday, March 7, 2018. Table 2.14-6 shows that traffic noise peaks during the 6:00 a.m., 7:00 a.m., and 1:00 p.m. hours at LT-3.
- The long-term noise level measurement at LT-4 was performed at 13201 Marshall Lane from 9:00 a.m. on Tuesday, March 6, 2018, to 9:00 a.m. on Wednesday, March 7, 2018. Table 2.14-7 shows that traffic noise peaks during the 8:00 a.m. hour at LT-4.
- The long-term noise level measurement at LT-5 was performed at 828 South Breezy Way from 9:00 a.m. on Wednesday, March 7, 2018, to 9:00 a.m. on Thursday, March 8, 2018. Table 2.14-8 shows that traffic noise peaks during the 6:00 a.m., 7:00 a.m., 2:00 p.m., 3:00 p.m., and 6:00 p.m. hours at LT-5.
- The long-term noise level measurement at LT-6 was performed at 1453 Highland Street from 9:00 a.m. on Wednesday, March 7, 2018, to 9:00 a.m. on Thursday, March 8, 2018. Table 2.14-9 shows that traffic noise peaks during the 5:00 a.m. hour at LT-6.

¹ A total of 62 measurements were conducted for 57 locations because measurements were conducted twice at five locations to improve the K-factor.

SR 55 (I-5 to SR 91) Initial Study/Environmental Assessment

• The long-term noise level measurement at LT-7 was performed at 3001 North Valleyview Street from 10:00 a.m. on Wednesday, March 7, 2018, to 10:00 a.m. on Thursday, March 8, 2018. Table 2.14-10 shows that traffic noise peaks during the 7:00 a.m., 4:00 p.m., 5:00 p.m., and 6:00 p.m. hours at LT-7.

All long-term noise monitoring locations are shown on Figure 2.14-9.

Monitor No.	Figure	Date	Start Time	Duration	dBA L _{eq}	Location Description	Land Use	Noise Sources	Notes
ST-1	Figure 2.14-9, Sheet 11	2/28/2018	9:27 AM	15 minutes	74.0	171 North Tustin Avenue, behind the medical offices.	Office	Traffic on SR 55 and SB SR 55 ramps.	
ST-2	Figure 2.14-9, Sheet 1	2/28/2018	9:27 AM	15 minutes	59.0	165 North Myrtle Avenue, on the sidewalk in front of the building.	Residential	Traffic on SR 55, traffic on SB SR 55 Irvine Boulevard off-ramp, and light traffic on North Myrtle Avenue.	
ST-3	Figure 2.14-9, Sheet 11	2/28/2018	9:27 AM	15 minutes	60.7	2321 East 4th Street. North of the Two Fisherman Grill patio area.	Restaurant	Traffic on SR 55 and SB SR 55 East 4th Street off-ramp and distant, intermittent traffic on East 4th Street.	
ST-4	Figure 2.14-9, Sheet 11	2/28/2018	10:14 AM	15 minutes	59.5	521 North Tustin Avenue, The Village Apartments. South of the patio of Building 581, Unit A.	Residential	Traffic on SR 55 and SB SR 55 East 4th Street off-ramp.	Patios have vinyl fence/wall. Too small to be 10 ft away from surface.
ST-5	Figure 2.14-9, Sheet 12	4/25/2018	11:49 AM	15 minutes	62.0	521 North Tustin Avenue, The Village Apartments. On the second floor walkway of Building 571, in front of Unit K. South of the balcony of Building 563, Unit G.	Residential	Traffic on SR 55 and SB SR 55 East 4th Street off-ramp.	
ST-6	Figure 2.14-9, Sheet 12	2/28/2018	10:55 AM	15 minutes	60.9	521 North Tustin Avenue, The Village Apartments. Southeast of the patio of Building 563, Unit A.	Residential	Traffic on SR 55 and SB SR 55 East 4th Street off-ramp.	Patios have vinyl fence/wall. Too small to be 10 ft away from surface.
ST-7	Figure 2.14-9, Sheet 12	2/28/2018	11:46 AM	15 minutes	62.7	999 North Tustin Avenue, east of the hospital building.	Hospital	Traffic on SR 55.	4.5-ft existing wall.
ST-8	Figure 2.14-9, Sheet 13	2/28/2018	12:22 PM	15 minutes	58.1	1301 North Tustin Avenue, east of the hospital building.	Hospital	Traffic on SR 55.	6-ft existing wall.
ST-9	Figure 2.14-9, Sheet 13	2/28/2018	12:55 PM	15 minutes	72.8	1403 North Tustin Avenue, east of the office building.	Office	Traffic on SR 55 and SB SR 55 17th Street on-ramp.	
ST-10	Figure 2.14-9, Sheets 13 & 14	3/6/2018	10:01 AM	15 minutes	66.2	2400 17th Street. In the parking lot of Vista Paint.	Retail	Traffic on SR 55, SB SR 55 17th Street on-ramp, and 17th Street.	
ST-11	Figure 2.14-9, Sheet 1	2/28/2018	10:14 AM	15 minutes	61.7	West of 17291 Irvine Boulevard. Granada Plaza B, Suites 300-495.	Office	Traffic on SR 55 and NB SR 55 Irvine Boulevard on-ramp.	Paused measurement for aircraft noise and parking lot activity.
ST-12	Figure 2.14-9, Sheet 1	2/28/2018	10:14 AM	15 minutes	58.8	17272 Roseleaf Avenue, in front of the homes.	Residential	Traffic on SR 55 and NB SR 55 Irvine Boulevard on-ramp and light traffic on Yorba Street.	10.5-ft existing wall.

Table 2.14-2: Short-Term Ambient Noise Monitoring Results

Monitor No.	Figure	Date	Start Time	Duration	dBA L _{eq}	Location Description	Land Use	Noise Sources	Notes
ST-13	Figure 2.14-9, Sheet 2	4/24/2018	1:36 PM	15 minutes	55.0	17272 Amaganset Way, in front of the homes.	Residential	Traffic on SR 55.	10.5-ft existing wall.
ST-14	Figure 2.14-9, Sheet 2	2/28/2018	10:55 AM	15 minutes	54.3	14491 Heights Drive, in front of the home.	Residential	Traffic on SR 55.	Birds and wind. 10.5-ft existing wall.
ST-15	Figure 2.14-9, Sheet 2	2/28/2018	11:46 AM	15 minutes	62.3	14411 Heights Drive, in the backyard.	Residential	Traffic on SR 55.	Birds and wind. 10.5-ft existing wall.
ST-16	Figure 2.14-9, Sheet 2	2/28/2018	11:46 AM	15 minutes	62.8	14341 Yorba Street, in the backyard.	Residential	Traffic on SR 55.	8.5-ft existing wall.
ST-17	Figure 2.14-9, Sheet 3	4/25/2018	12:29 PM	15 minutes	62.8	14291 Yorba Street, in the backyard.	Residential	Traffic on SR 55.	8.5-ft existing wall.
ST-18	Figure 2.14-9, Sheet 3	2/28/2018	12:22 PM	15 minutes	68.9	14211 Yorba Street, south of the office building.	Office	Traffic on SR 55 and NB SR 55 17th Street off-ramp.	4-ft existing wall.
ST-19	Figure 2.14-9, Sheet 3	2/28/2018	12:55 PM	15 minutes	63.5	14101 Yorba Street, north of the building. In the fourth parking space from the building.	Office	Traffic on SR 55 and NB SR 55 17th Street off-ramp.	6.5-ft existing wall.
ST-20	Figure 2.14-9, Sheet 3	2/28/2018	12:55 PM	15 minutes	64.7	14101 Yorba Street, in the parking lot south of the office building.	Office	Traffic on SR 55, NB SR 55 17th Street off-ramp, and light traffic on Yorba Street.	
ST-21	Figure 2.14-9, Sheet 14	3/6/2018	10:01 AM	15 minutes	59.5	13922 Deodar Street, in the backyard.	Residential	Traffic on SR 55, SB SR 55 17th Street off-ramp, and SB 17th Street loop off-ramp.	10.5-ft existing wall.
ST-22	Figure 2.14-9, Sheet 14	3/6/2018	10:40 AM	15 minutes	59.8	13802 Deodar Street, in the backyard.	Residential	Traffic on SR 55 and SB 17th Street off-ramp.	12-ft existing wall.
ST-23	Figure 2.14-9, Sheet 15	3/6/2018	11:14 AM	15 minutes	62.4	2013 Deodar Street, in the backyard.	Residential	Traffic on SR 55.	11-ft existing wall.
ST-24 ¹	Figure 2.14-9, Sheet 15	4/10/2018	2:45 PM	15 minutes	60.0	2109 Deodar Street, in the backyard.	Residential	Traffic on SR 55.	12-ft existing wall.
ST-24 ²	N/A	3/6/2018	11:14 AM	15 minutes	54.6	2109 Deodar Street, in the backyard.	Residential	Traffic on SR 55.	12-ft existing wall.
ST-25	Figure 2.14-9, Sheet 15	3/6/2018	11:59 AM	15 minutes	61.6	2413 East Buffalo Avenue, in the backyard.	Residential	Traffic on SR 55.	13.5-ft existing wall.
ST-26	Figure 2.14-9, Sheet 4	3/6/2018	10:01 AM	15 minutes	54.9	13931 Carroll Way, next to the outdoor eating area of Date Cafe.	Restaurant	Traffic on SR 55 and NB SR 55 17th Street on-ramp, parking lot activity, and vehicles passing by.	Motorcycle startup and idle vehicle running for 1 minute.
ST-27 ¹	Figure 2.14-9, Sheet 4	4/10/2018	2:01 PM	15 minutes	60.2	13801 Marshall Lane, in the backyard.	Residential	Traffic on SR 55, NB SR 55 17th Street on-ramp.	16-ft existing wall.

Monitor No.	Figure	Date	Start Time	Duration	$dBA\ L_{eq}$	Location Description	Land Use	Noise Sources	Notes
ST-27 ²	Figure 2.14-9, Sheet 4	3/6/2018	10:40 AM	15 minutes	41.7	13811 Marshall Lane, in front of the home.	3811 Marshall Lane, in front of the Residential Traffic on S		Birds, wind, and very light traffic on Marshall Lane. 16-ft existing wall.
ST-28	Figure 2.14-9, Sheet 4	3/6/2018	10:40 AM	15 minutes	51.8	13751 Marshall Lane, on the sidewalk in front of the home.	Residential	Traffic on SR 55.	Some aircraft noise, 16-ft existing wall.
ST-29	Figure 2.14-9, Sheet 5	3/6/2018	11:14 AM	15 minutes	60.7	13662 Marshall Lane, in the driveway in front of the home.	Residential	Traffic on SR 55.	16-ft existing wall.
ST-30	Figure 2.14-9, Sheet 5	3/6/2018	11:59 AM	15 minutes	55.1	13562 Marshall Lane, in the backyard.	Residential	Traffic on SR 55.	Some aircraft noise, 16-ft existing wall.
ST-31	Figure 2.14-9, Sheet 16	3/6/2018	12:41 PM	15 minutes	58.1	2351 East Santa Clara Avenue, Latitude Apartment Homes. In front of the patios of Building 2329, Units 29A and 29E.	Residential	Traffic on SR 55 and occasional faint traffic on Fairview Avenue.	16-ft existing wall. First row patios are shielded by carports.
ST-32	Figure 2.14-9, Sheet 16	3/6/2018	12:41 PM	15 minutes	60.0	Between 2409 and 2417 Deodar Street, behind the homes.	Residential	Traffic on SR 55.	16-ft existing wall.
ST-33	Figure 2.14-9, Sheet 16	3/6/2018	1:26 PM	15 minutes	57.8	2513 Deodar Street, in the backyard.	Residential	Traffic on SR 55.	Some aircraft noise, 16-ft existing wall.
ST-34	Figure 2.14-9, Sheet 17	3/6/2018	1:26 PM	15 minutes	58.7	2617 Deodar Street, in the backyard.	Residential	Traffic on SR 55.	13.5-ft existing wall.
ST-35 ¹	Figure 2.14-9, Sheet 6	4/10/2018	11:01 AM	15 minutes	61.8	13321 Marshall Lane, in the backyard	Residential	Traffic on SR 55.	16.5-ft existing wall. ³
ST-35 ²	N/A	3/6/2018	11:59 AM	15 minutes	52.4	13321 Marshall Lane, on the sidewalk in front of the home.	Residential	Traffic on SR 55.	Light traffic on Marshall Lane. Aircraft noise filtered out. 16.5-ft existing wall. ³
ST-36	Figure 2.14-9, Sheet 6	3/6/2018	12:41 PM	15 minutes	58.4	13271 Marshall Lane, in the backyard.	Residential	Traffic on SR 55.	16.5-ft existing wall. ³
ST-37	Figure 2.14-9, Sheet 6	3/6/2018	1:26 PM	15 minutes	60.7	13142 Marshall Lane, in the front yard.	Residential	Traffic on SR 55.	14.5-ft existing wall.
ST-38	Figure 2.14-9, Sheet 7	3/7/2018	2:27 PM	15 minutes	56.5	13022 Marshall Lane, in the backyard.	Residential	Traffic on SR 55.	14.5-ft existing wall.
ST-39	Figure 2.14-9, Sheet 17	3/7/2018	2:27 PM	15 minutes	58.1	2029 East Stearns Avenue, north of the front of the homes. At the cul-de-sac of East Stearns Avenue.	Residential	Traffic on SR 55 and EB SR 22 to SB SR 55 connector.	Aircraft and motorcycles filtered out, 14.5 ft existing wall.
ST-40	Figure 2.14-9, Sheet 17	3/7/2018	1:49 PM	15 minutes	52.4	2014 East Kirkwood Avenue, in the front yard.	Residential	Traffic on SR 55 and EB SR 22 to SB SR 55 connector.	Aircraft filtered out, 9.5 ft existing wall.

Monitor No.	Figure	Date	Start Time	Duration	dBA L _{eq}	Location Description	Land Use	Noise Sources	Notes
ST-41	Figure 2.14-9, Sheet 7	3/7/2018	2:27 PM	15 minutes	63.2	2201 East Fairhaven Avenue, Grace Church of Orange. Near the playground area.	Church	Traffic on SR 55 and NB SR 55 to WB SR 22 connector.	11 ft existing wall.
ST-42	Figure 2.14-9, Sheets 7-9	3/7/2018	1:49 PM	15 minutes	62.8	816 South Breezy Way, in the backyard.	Residential	Traffic on SR 55 and NB SR 55 to WB SR 22 connector.	9.5-10.5-ft existing wall.
ST-43	Figure 2.14-9, Sheets 7-9	3/7/2018	1:13 PM	15 minutes	60.1	732 South Breezy Way, in the backyard.	Residential	Traffic on SR 55 and NB SR 55 to WB SR 22 connector.	9.5-10.5-ft existing wall.
ST-44	Figure 2.14-9, Sheet 18	3/7/2018	1:13 PM	15 minutes	67.2	681 South Tustin Street, south of Caltrans maintenance facility.	Maintenance Facility	Traffic on EB SR 22 to NB SR 55 connector and SR 55.	4.5- to 7-ft existing wall.
ST-45	Figure 2.14-9, Sheet 19	3/7/2018	12:22 PM	15 minutes	65.5	1940 East Katella Avenue, Chevron gas station.	Gas Station	Traffic on SR 55, SB SR 55 Katella Avenue on-ramp, and Katella Avenue.	
ST-46	Figure 2.14-9, Sheet 19	3/7/2018	12:22 PM	15 minutes	59.8	1918 East Vanowen Avenue, Ridgewood Village Apartments. Behind the multifamily homes.	Residential	Traffic on SR 55, SB SR 55 Katella Avenue off-ramp, and Katella Avenue.	16-ft existing wall. ³
ST-47	Figure 2.14-9, Sheet 19	3/7/2018	12:22 PM	15 minutes	59.6	1453 North Highland Street, Ridgewood Village Apartments. Behind the homes.	Residential	Traffic on SR 55 and SB SR 55 Katella Avenue off-ramp.	Retaining wall only.
ST-48	Figure 2.14-9, Sheet 20	3/7/2018	11:29 AM	15 minutes	60.8	2652 North Tustin Street, in the parking lot. Near the Starbucks patio area.	Restaurant	Traffic on Tustin Street and SR 55.	Vehicles in parking lot.
ST-49	Figure 2.14-9, Sheet 21	3/7/2018	10:32 AM	15 minutes	57.4	2864 North Tustin Street, in Eisenhower Park.	Park	Traffic on SR 55, SB SR 55 Lincoln Avenue off-ramp, and North Tustin Street.	
ST-50	Figure 2.14-9, Sheet 21	3/7/2018	10:32 AM	15 minutes	58.1	3047 North Valley View Street, in the backyard.	Residential	Traffic on SR 55 and North Tustin Street.	Birds and wind.
ST-51 ¹	Figure 2.14-9, Sheet 9	4/10/2018	10:35 AM	15 minutes	71.9	2650 North Santiago Boulevard, behind the businesses.	Restaurant/ Commercial/ Retail	Traffic on SR 55 and NB SR 55 Lincoln Avenue off-ramp.	
ST-51 ²	N/A	3/7/2018	11:29 AM	15 minutes	69.4	2680 North Santiago Boulevard, southwest of Farukhi and Co.	Restaurant/ Commercial/ Retail	Traffic on SR 55 and SR 55 NB off-ramp to Lincoln Avenue.	
ST-52	Figure 2.14-9, Sheet 9	7/17/2018	10:39 AM	15 minutes	58.0	2680 North Vista Glen Road, in the backyard.	Residential	Traffic on SR 55, North Santiago Boulevard, SR 55 NB off-ramp to Lincoln Avenue, and SR 55 NB on-ramp from Lincoln Avenue.	

Monitor No.	Figure	Date	Start Time	Duration	dBA L _{eq}	Location Description	Land Use	Noise Sources	Notes
ST-53	Figure 2.14-9, Sheet 9	7/17/2018	11:16 AM	15 minutes	59.4	2011 East Vista Royale Drive, in the backyard.	Residential	Traffic on SR 55, North Santiago Boulevard, Lincoln Avenue/Nohl Ranch Road, SR 55 NB off-ramp to Lincoln Avenue, and SR 55 NB on-ramp from Lincoln Avenue.	
ST-54 ¹	Figure 2.14-9, Sheet 9	4/10/2018	9:22 AM	15 minutes	71.3	2854 North Santiago Boulevard, in Flappy Jack's Pancake House parking lot.	Restaurant	Traffic on SR 55.	
ST-54 ²	N/A	3/7/2018	10:32 AM	15 minutes	66.3	2854 North Santiago Boulevard, in Flappy Jack's Pancake House parking lot.	Restaurant	Traffic on SR 55.	
ST-55	Figure 2.14-9, Sheet 10	3/7/2018	9:52 AM	15 minutes	72.2	2910 North Santiago Boulevard, Orange Hills Assembly Church. In the north parking lot.	Church	Traffic on SR 55 and North Santiago Boulevard.	
ST-56	Figure 2.14-9, Sheet 10	4/24/2018	10:41 AM	15 minutes	62.8	2890 East Maple Tree Drive, in the backyard.	Residential	Traffic on SR 55 and faint traffic on North Santiago Boulevard and North Tustin Street.	
ST-57	Figure 2.14-9, Sheet 10	4/24/2018	10:41 AM	15 minutes	58.5	2942 East Maple Tree Drive, in the backyard.	Residential	Traffic on SR 55 and faint traffic on North Santiago Boulevard and North Tustin Street.	6.5-ft existing wall.

Notes: dBA L_{eq}: equivalent continuous sound level measured in A-weighted decibels; ft: foot/feet; EB: eastbound; NB: northbound; SB: southbound; SR 55: State Route 55; WB; westbound Source: Compiled by LSA (2018).

¹ Noise level measurement was re-conducted to improve the K-factor. The noise level measurement was calibrated using the traffic counts collected during the original measurement.
 ² Original noise level measurement which was re-conducted to improve the K-factor.
 ³ The height of this wall includes a portion of the wall that functions as a retaining wall.

Date	Temperature (°F)	Average Wind Speed (mph)
2/28/2018	60.4 - 72.4	0.7 – 4.0
3/6/2018	75.9 – 89.8	0.7 – 2.0
3/7/2018	64.0 - 80.0	0.0 - 3.5
4/10/2018	76.7 – 95.4	0.7 – 2.4
4/24/2018	77.1 – 78.1	1.0 – 1.9
4/25/2018	72.9 – 76.3	1.2 – 1.8
7/17/2018	85.1 – 96.8	0.9 – 1.3

Table 2.14-3: Meteorological Conditions

Notes: °F: degrees Fahrenheit; mph: miles per hour Source: Compiled by LSA (2018).

Table 2.14-4: Long-Term 24-Hour Noise Level Measurement Results at 17272 Amaganset Way, Tustin, CA (LT-1)

Hour of Day	Start Time	Date	Noise Level (dBA L _{eq})
1	9:00 AM	2/28/2018	59
2	10:00 AM	2/28/2018	60
3	11:00 AM	2/28/2018	61 ª
4	12:00 PM	2/28/2018	61 ^a
5	1:00 PM	2/28/2018	61 ª
6	2:00 PM	2/28/2018	61 ª
7	3:00 PM	2/28/2018	60
8	4:00 PM	2/28/2018	60
9	5:00 PM	2/28/2018	59
10	6:00 PM	2/28/2018	59
11	7:00 PM	2/28/2018	59
12	8:00 PM	2/28/2018	59
13	9:00 PM	2/28/2018	59
14	10:00 PM	2/28/2018	58
15	11:00 PM	2/28/2018	56
16	12:00 AM	2/29/2018	54
17	1:00 AM	2/29/2018	53
18	2:00 AM	2/29/2018	53
19	3:00 AM	2/29/2018	55
20	4:00 AM	2/29/2018	58
21	5:00 AM	2/29/2018	60
22	6:00 AM	2/29/2018	60
23	7:00 AM	2/29/2018	60
24	8:00 AM	2/29/2018	59

Notes: dBA $L_{\rm eq}$: equivalent continuous sound level measured in A-weighted decibels Figure 2.14-9, Sheet 2

Source: Compiled by LSA (2018).

^a **Bold** numbers represent the peak traffic noise hours.

21	20	19	18	17	16	15	14	13	12	11	10	6	8	7	6	5	4	3	2	1	Hour of Day	
3:00 PM	2:00 PM	1:00 PM	12:00 PM	11:00 AM	10:00 AM	9:00 AM	8:00 AM	7:00 AM	6:00 AM	5:00 AM	4:00 AM	3:00 AM	2:00 AM	1:00 AM	12:00 AM	11:00 PM	10:00 PM	9:00 PM	8:00 PM	7:00 PM	Start Time	
4/25/2018	4/25/2018	4/25/2018	4/25/2018	4/25/2018	4/25/2018	4/25/2018	4/25/2018	4/25/2018	4/25/2018	4/25/2018	4/25/2018	4/25/2018	4/25/2018	4/25/2018	4/25/2018	4/24/2018	4/24/2018	4/24/2018	4/24/2018	4/24/2018	Date	
61	62	63 a	63 a	63 a	63 ^a	63 ^a	61	61	61	62	60	57	55	55	57	59	61	62	62	62	Noise Level (dBA L _{eq})	

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Time of Day

	Table 2.1
14291 Yorba	4-5: Long-Term 24-H
Street, Tustin, CA (LT-2	our Noise Level Measu
 2)	rement Results at



Long-Term 24-Hour Noise

Level Measurement

LT-1: 17272 Amaganset Way, Tustin, CA

Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

Noise Level (dBA L_{eq})

58

60

62

56

52

9:00 AM

10:00 AM 11:00 AM 12:00 PM 1:00 PM

> 2:00 PM 3:00 PM 4:00 PM 5:00 PM 6:00 PM 7:00 PM

> 8:00 PM

9:00 PM 10:00 PM 11:00 PM 12:00 AM 2:00 AM 3:00 AM 4:00 AM 5:00 AM 6:00 AM 7:00 AM

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Hour of Day	Start Time	Date	Noise Level (dBA Leq)
1	10:00 AM	3/6/2018	60
2	11:00 AM	3/6/2018	61
3	12:00 PM	3/6/2018	61
4	1:00 PM	3/6/2018	62 a
ъ	2:00 PM	3/6/2018	61
6	3:00 PM	3/6/2018	61
7	4:00 PM	3/6/2018	61
8	5:00 PM	3/6/2018	59
6	6:00 PM	3/6/2018	60
10	7:00 PM	3/6/2018	61
11	8:00 PM	3/6/2018	61
12	9:00 PM	3/6/2018	60
13	10:00 PM	3/6/2018	59







Figure 2.14-3. Long-term 24-hour Noise Level Measurement at LT-2

Hour of Day 23 22 Start Time 5:00 PM 4:00 PM 4/25/2018 4/25/2018 Date Noise Level (dBA L_{eq}) 62 60 <u>6</u>

Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

24 6:00 PM

Figure 2.14-9, Sheet 3 Source: Compiled by LSA (2018). Bold numbers represent the peak traffic noise hours.

dBA Leq: equivalent continuous sound level measured in A-weighted decibels

4/25/2018

Hour of Day	Start Time	Date	Noise Level (dBA L _{eq})
14	11:00 PM	3/6/2018	57
15	12:00 AM	3/7/2018	56
16	1:00 AM	3/7/2018	54
17	2:00 AM	3/7/2018	54
18	3:00 AM	3/7/2018	56
19	4:00 AM	3/7/2018	59
20	5:00 AM	3/7/2018	61
21	6:00 AM	3/7/2018	62 a
22	7:00 AM	3/7/2018	62 a
23	8:00 AM	3/7/2018	61
24	9:00 AM	3/7/2018	60

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Notes: dBA Lee: equivalent continuous sourio reveringed Figure 2.14-9, Sheet 5 Source: Compiled by LSA (2018). ^a Bold numbers represent the peak traffic noise hours.





Hour of Day	Start Time	Date	Noise Level (dBA L _{eq})
1	9:00 AM	3/6/2018	64
2	10:00 AM	3/6/2018	63
3	11:00 AM	3/6/2018	64
4	12:00 PM	3/6/2018	64
5	1:00 PM	3/6/2018	64
6	2:00 PM	3/6/2018	64
7	3:00 PM	3/6/2018	64
8	4:00 PM	3/6/2018	64
9	5:00 PM	3/6/2018	61
10	6:00 PM	3/6/2018	63
11	7:00 PM	3/6/2018	63
12	8:00 PM	3/6/2018	64
13	9:00 PM	3/6/2018	64
14	10:00 PM	3/6/2018	62
15	11:00 PM	3/6/2018	60
16	12:00 AM	3/7/2018	58
17	1:00 AM	3/7/2018	57
18	2:00 AM	3/7/2018	57
19	3:00 AM	3/7/2018	58
20	4:00 AM	3/7/2018	61
21	5:00 AM	3/7/2018	64
22	6:00 AM	3/7/2018	65
23	7:00 AM	3/7/2018	65
24	8:00 AM	3/7/2018	66 ^a

Table 2.14-7: Long-Term 24-Hour Noise Level Measurement Results at 13201 Marshall Lane, Tustin, CA (LT-4)

Notes: dBA $L_{eq}:$ equivalent continuous sound level measured in A-weighted decibels Figure 2.14-9, Sheet 6

Source: Compiled by LSA (2018).

^a Bold numbers represent the peak traffic noise hour.

	828 South Breezy	Way, Orange, CA (LT-	
Hour of Day	Start Time	Date	Noise Level (dBA Leq)
1	9:00 AM	3/7/2018	64
2	10:00 AM	3/7/2018	63
З	11:00 AM	3/7/2018	64
4	12:00 PM	3/7/2018	64
თ	1:00 PM	3/7/2018	64
6	2:00 PM	3/7/2018	65 ^a
7	3:00 PM	3/7/2018	65 ^a
8	4:00 PM	3/7/2018	64
6	5:00 PM	3/7/2018	62
10	6:00 PM	3/7/2018	65 a
11	7:00 PM	3/7/2018	64
12	8:00 PM	3/7/2018	64
13	9:00 PM	3/7/2018	63
14	10:00 PM	3/7/2018	62
15	11:00 PM	3/7/2018	59
16	12:00 AM	3/8/2018	58
17	1:00 AM	3/8/2018	56
18	2:00 AM	3/8/2018	56
19	3:00 AM	3/8/2018	57
20	4:00 AM	3/8/2018	60
21	5:00 AM	3/8/2018	63
22	6:00 AM	3/8/2018	65 a
23	7:00 AM	3/8/2018	65 a
2	8-00 AM	3/8/2018	64



Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

2.14-19

Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 143 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Leg) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 PM 3/7/2018 64 5 1:00 PM 3/7/2018 64 6 2:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 11 7:00 PM 3/7/2018 61 12 8:00 PM 3/7/2018 62 13 9:00 PM 3/7/2018 62 14 7:00 PM 3/7/2018 62 14 10:00 PM 3/7/2018 62 15 11:00 PM 3/7/2018 62 16 12:00 AM 3/8/2018 55 16 12:00 AM 3/8/2018 56	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) 1 9:00 AM 2 1:00 AM 3/7/2018 4 1:00 AM 3/7/2018 64 5 1:00 PM 3/7/2018 64 6 2:00 PM 3/7/2018 64 7 9:00 AM 3/7/2018 64 6 2:00 PM 3/7/2018 64 7 3:00 PM 3/7/2018 64 10 6:00 PM 3/7/2018 64 11 7:00 PM 3/7/2018 61 12 8:00 PM 3/7/2018 61 11 7:00 PM 3/7/2018 61 12:00 AM 3/7/2018 61 11:00 PM 11:1:00 PM 3/7/2018 61 11:00 PM 12:00 AM 3/7/2018 61 12:00 AM 12:00 AM 3/7/2018 61 12:00 AM 12:00 AM 3/7/2018 61 62 60 11:00 AM	63	3/8/2018	8:00 AM	24
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA L _m) 1 9:00 AM 37/2018 64 2 10:00 AM 37/2018 64 3 11:00 AM 37/2018 64 4 12:00 PM 37/2018 61 5 1:00 PM 37/2018 61 6 2:00 PM 37/2018 61 6 2:00 PM 37/2018 61 6 2:00 PM 37/2018 61 7 3:00 PM 37/2018 61 8 4:00 PM 37/2018 61 10 6:00 PM 37/2018 62 11 7:00 PM 37/2018 62 12 8:00 PM 37/2018 62 13 9:00 PM 37/2018 62 14 10:00 PM 37/2018 62 15 11:00 PM 37/2018 63 <t< td=""><td>Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA L_{ab}) 2 10:00 AM 37/2018 64 3 10:00 PM 37/2018 64 5 10:00 PM 37/2018 64 6 2:00 PM 37/2018 64 11 9:00 PM 37/2018 64 11 10:00 PM 37/2018 64 11 10:00 PM 37/2018 64 11 11:00 PM 37/2018 64 11 11:00 PM 37/2018 64 12:00 PM 37/2018 64 10:00 PM 11:00 PM 37/2018 61 11:00 PM 12:00 AM 37/2018 61 62 11:00 PM 37/2018 61 62 12:00 AM 37/2018 61 62 11:00 PM 37/2018 61 62 12:00 AM 38/2018 62</td><td>62</td><td>3/8/2018</td><td>7:00 AM</td><td>23</td></t<>	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA L _{ab}) 2 10:00 AM 37/2018 64 3 10:00 PM 37/2018 64 5 10:00 PM 37/2018 64 6 2:00 PM 37/2018 64 11 9:00 PM 37/2018 64 11 10:00 PM 37/2018 64 11 10:00 PM 37/2018 64 11 11:00 PM 37/2018 64 11 11:00 PM 37/2018 64 12:00 PM 37/2018 64 10:00 PM 11:00 PM 37/2018 61 11:00 PM 12:00 AM 37/2018 61 62 11:00 PM 37/2018 61 62 12:00 AM 37/2018 61 62 11:00 PM 37/2018 61 62 12:00 AM 38/2018 62	62	3/8/2018	7:00 AM	23
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 143 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA L _{sa)} 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 64 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 8 4:00 PM 3/7/2018 61 10 6:00 PM 3/7/2018 62 11 7:00 PM 3/7/2018 62 12 8:00 PM 3/7/2018 62 13 9:00 PM 3/7/2018 62 14 10:00 PM 3/7/2018 62 15 11:00 PM 3/8/2018 55 16 2:00 AM 3/8/2018 56	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Ying Start Time Date Noise Level (dBA L ₁₀₀) 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 64 4 12:00 PM 3/7/2018 64 5 10:00 AM 3/7/2018 64 6 2:00 PM 3/7/2018 64 11:00 AM 3/7/2018 64 10:00 PM 11:00 PM 3/7/2018 64 60 11:00 PM 3/7/2018 61 61 12:00 AM 3/7/2018 61 62 60 13:00 AM 3/7/2018 61 62 62 62 14:00 AM 3/7/2018 61 62 62 62 63 62 63 <	64	3/8/2018	6:00 AM	22
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA L _{eq}) 1 9:00 AM 37/2018 64 2 10:00 AM 37/2018 64 3 11:00 AM 37/2018 61 4 12:00 PM 37/2018 61 5 1:00 PM 37/2018 61 6 2:00 PM 37/2018 61 6 3:00 PM 37/2018 61 7 3:00 PM 37/2018 61 9 5:00 PM 37/2018 61 11 7:00 PM 37/2018 61 12 8:00 PM 37/2018 62 13 9:00 PM 37/2018 62 14 7:00 PM 37/2018 62 15 11:00 PM 37/2018 62 16 12:00 AM 37/2018 53 16 12:00 AM 37/2018 53	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 13:00 AM Hour of Day Start Time Date Noise Level (dBA Lee) 2 10:00 AM 37/2018 64 3 11:00 AM 37/2018 64 4 2:00 PM 37/2018 64 5 1:00 PM 37/2018 64 6 2:00 PM 37/2018 64 7 3:00 PM 37/2018 64 11 7:00 PM 37/2018 64 12:00 PM 37/2018 64 63 11:00 PM 37/2018 64 63 11:00 PM 37/2018 64 63 12:00 PM 37/2018 64 63 11:00 PM 37/2018 61 64 12:00 AM 37/2018 61 63 12:00 AM 37/2018 61 63 12:00 AM 37/2018 61 62 13:00 AM 37/2018 62 62 14:0 OD PM <td>65 a</td> <td>3/8/2018</td> <td>5:00 AM</td> <td>21</td>	65 a	3/8/2018	5:00 AM	21
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA L _{reg}) 1 9:00 AM 37/2018 64 2 10:00 AM 37/2018 64 3 11:00 AM 37/2018 61 4 12:00 PM 37/2018 61 5 1:00 PM 37/2018 61 6 2:00 PM 37/2018 61 6 3:00 PM 37/2018 61 7 3:00 PM 37/2018 61 9 5:00 PM 37/2018 61 10 6:00 PM 37/2018 61 11 7:00 PM 37/2018 62 12 8:00 PM 37/2018 62 13 9:00 PM 37/2018 62 14 70:00 PM 37/2018 62 15 11:00 PM 37/2018 62 16 12:00 AM 37/2018 53	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) 1 1 10:00 AM 1 10:00 AM 11:00 AM 2 10:00 AM 11:00 AM 4 12:00 PM 10:00 AM 5 10:00 AM 37/2018 64 6 2:00 PM 37/2018 64 1 3:00 PM 37/2018 64 1 3:00 PM 37/2018 64 1 3:00 PM 37/2018 64 1 10:00 PM 37/2018 64 1 3:00 PM 37/2018 64 1 10:00 PM 37/2018 61 1 61 61 61 1 10:00 PM 37/2018 61 1 62 62 62 1	63	3/8/2018	4:00 AM	20
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Leq) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 PM 3/7/2018 61 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 9 5:00 PM 3/7/2018 62 10 6:00 PM 3/7/2018 62 12 8:00 PM 3/7/2018 62 13 9:00 PM 3/7/2018 62 14 10:00 PM 3/7/2018 62 15 11:00 PM 3/7/2018 62 16 12:00 AM 3/8/2018 55	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) 1 9:00 AM 1 10:00 AM 10:00 AM 3:00 PM 3:00 PM 3:00 PM 3:00 PM 3:00 PM 1:00 PM 3:00 PM 3:00 PM 3:00 PM 1:00 PM 3:00 PM 3:00 PM 3:00 PM 1:00 PM 3:7/2018 61 1:00 AM 3:7/2018 61 1:00 AM 3:7/2018 61 1:00 AM 3:7/2018 61 1:00 AM 62 62<	58	3/8/2018	3:00 AM	19
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA L _{ed}) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 64 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 8 4:00 PM 3/7/2018 61 11 7:00 PM 3/7/2018 61 12 8:00 PM 3/7/2018 62 13 9:00 PM 3/7/2018 62 14 10:00 PM 3/7/2018 62 13 9:00 PM 3/7/2018 62 14 10:00 PM 3/7/2018 53	Hour of Day Start Time Date North Highland Street, Orange, CA (LT-6) 1 9:00 AM 11:00 AM 12:00 PM 2 11:00 AM 37/2018 64 3 1:00 PM 37/2018 64 5 1:00 PM 37/2018 64 6 2:00 PM 37/2018 64 11 1:00 PM 37/2018 64 11 1:00 PM 37/2018 64 12:00 PM 37/2018 64 5:00 PM 11 7:00 PM 37/2018 64 12:00 PM 37/2018 64 63 12:00 PM 37/2018 64 63 12:00 PM 37/2018 61 63 13 5:00 PM 37/2018 61 14 1:00 PM 37/2018 61 12:00 AM 37/2018 61 63 14 0:00 PM 37/2018 61 15 1:00 AM 62 63 16 <td>55</td> <td>3/8/2018</td> <td>2:00 AM</td> <td>18</td>	55	3/8/2018	2:00 AM	18
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA L _{ed}) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 64 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 8 4:00 PM 3/7/2018 61 9 5:00 PM 3/7/2018 62 10 6:00 PM 3/7/2018 62 11 7:00 PM 3/7/2018 62 12 8:00 PM 3/7/2018 62 13 9:00 PM 3/7/2018 62 13 9:00 PM 3/7/2018 62	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level Measurement Results at 11:00 AM 2 10:00 AM 3/7/2018 12:00 PM 3 11:00 PM 3/7/2018 6:00 PM 4 10:00 PM 3/7/2018 6:00 PM 5 10:00 PM 3/7/2018 6:1 7 3:00 PM 3/7/2018 6:1 11 8:00 PM 3/7/2018 6:1 11 8:00 PM 3/7/2018 6:1 12 8:00 PM 3/7/2018 6:1 12 9:00 PM 3/7/2018 6:1 12 8:00 PM 3/7/2018 6:1 13 9:00 PM 3/7/2018 6:1 14 10:00 PM 3/7/2018 6:1 15 11:00 PM 6:2 6:3 15 9:00 PM 6:1 6:3 15 9:00 PM 6:1 6:3 12:00 AM 6:3	56	3/8/2018	1:00 AM	17
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Leq) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 64 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 62 10 6:00 PM 3/7/2018 62 11 7:00 PM 3/7/2018 62 12 8:00 PM 3/7/2018 62 12 8:00 PM 3/7/2018 62 12 8:00 PM 3/7/2018 62	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level Measurement Results at 12:00 PM 1 9:00 AM 3:00 PM 3:00 PM 2 10:00 AM 3/7/2018 6:00 PM 4 12:00 PM 3/7/2018 6:4 7 3:00 PM 3/7/2018 6:3 8 4:00 PM 3/7/2018 6:4 10 5:00 PM 3/7/2018 6:4 11 7:00 PM 3/7/2018 6:4 12 8:00 PM 3/7/2018 6:4 11 7:00 PM 3/7/2018 6:4 12 8:00 PM 3/7/2018 6:4 13 9:00 PM 3/7/2018 6:1 13 9:00 PM 6:2 6:0 14 10:00 PM 6:2 6:0 13 9:00 PM 6:1 6:1 14 10:00 PM 6:2 6:0 15 11:00 PM 6:2 <td>57</td> <td>3/8/2018</td> <td>12:00 AM</td> <td>16</td>	57	3/8/2018	12:00 AM	16
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Leq) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 61 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 8 4:00 PM 3/7/2018 61 9 5:00 PM 3/7/2018 62 10 6:00 PM 3/7/2018 62 11 7:00 PM 3/7/2018 62 12 8:00 PM 3/7/2018 62 13 9:00 PM 3/7/2018 61 <	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) 1 9:00 AM 1 9:00 PM 2 10:00 AM 1 9:00 PM 3 11:00 AM 4 10:00 AM 5 10:00 AM 3 11:00 AM 4 10:00 AM 3 11:00 AM 4 10:00 AM 3 11:00 AM 4 10:00 PM 3:00 PM 37/2018 6 2:00 PM 3:00 PM 37/2018 6 2:00 PM 3:00 PM 37/2018 6 64 11:00 PM 37/2018 61 61 12:00 PM 37/2018 61 61 61 61 62 61 7 7:00 AM 3:00 PM 37/2018 61 61 62 61 63	58	3/7/2018	11:00 PM	15
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Leq) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 61 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 9 5:00 PM 3/7/2018 62 10 6:00 PM 3/7/2018 62 11 7:00 PM 3/7/2018 62 12 8:00 PM 3/7/2018 62 12 8:00 PM 3/7/2018 62 13 9:00 PM 3/7/2018 61	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 10:00 AM 1 9:00 AM 1:00 PM 3:00 PM 3 11:00 AM 3 11:00 PM 3 11:00 PM 3/7/2018 64 61 64 9 5:00 PM 3/7/2018 64 11 7:00 PM 3/7/2018 64 61 61 12:00 AM 3/7/2018 61 61 12:00 PM 3/7/2018 61 61 12:00 AM 62	60	3/7/2018	10:00 PM	14
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Leq) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 61 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 8 4:00 PM 3/7/2018 61 9 5:00 PM 3/7/2018 62 10 6:00 PM 3/7/2018 62 11 7:00 PM 3/7/2018 62 12 8:00 PM 3/7/2018 62	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 10:00 AM 11:00 AM 11:00 AM 1 9:00 AM 10:00 AM 2 Start Time 10:00 AM Date 12:00 PM 10:00 AM North Highland Street, Orange, CA (LT-6) 3 11:00 AM 10:00 AM 3/7/2018 3/7/2018 Date 10:00 PM 10:00 PM Noise Level (dBA Lee) 4 12:00 PM 10:00 PM 3/7/2018 64 64 3/7/2018 64 12:00 AM 5 11:00 PM 3/7/2018 64 64 64 3/7/2018 64 64 1:00 PM 9 5:00 PM 3/7/2018 64 64 61 61 63 61 63 62 64 62 11 7:00 PM 3/7/2018 64 61 63 61 64 61 63 62 64 62	61	3/7/2018	9:00 PM	13
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Leq) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 64 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 8 4:00 PM 3/7/2018 61 9 5:00 PM 3/7/2018 61 10 6:00 PM 3/7/2018 61 11 7:00 PM 3/7/2018 62	Hour of Day Start Time 9:00 AM 1 1 9:00 AM 1 1 11:00 AM 1 1 10:00 AM 1 1 10:00 AM 1 1 11:00 AM 1 1 9:00 AM 1 1 9:00 AM 1 10:00 AM 1 9:00 AM 1 9:00 AM 1 10:00 AM 1 9:00 AM 1 10:00 AM 10:00 AM 3:00 PM 11:00 AM 37/2018 11:00 AM 37/2018 11:00 PM 37/2018 11:00 PM 37/2018 11:00 AM 37/2018 10:00 PM 61 11:00 AM 61 11:00 AM 61 11:00 AM 61 11:	62	3/7/2018	8:00 PM	12
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Led) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 64 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 9 5:00 PM 3/7/2018 61 9 5:00 PM 3/7/2018 61 9 5:00 PM 3/7/2018 62 9 5:00 PM 3/7/2018 62 9 5:00 PM 3/7/2018 63	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 10:00 AM 1 9:00 AM 1 9:00 AM 1 10:00 AM 1 9:00 AM 1 10:00 AM 1 9:00 AM 1 9:00 AM 1 10:00 AM 2 10:00 AM 1:00 PM 2:00 PM 3:00 PM 3:00 PM 4 10:00 AM 3:00 PM 5 11:00 AM 3:00 PM 3:00 PM 3:00 PM 3:00 PM 4 12:00 PM 3:00 PM 3:00 PM 3:00 PM 3:00 PM 3:00 PM 3:00 PM 3:00 AM 4:00 PM 3:00 AM 4:00 AM 5:00 PM 3:00 AM 4:00 AM 5:00 PM 3:00 AM 4:00 AM 5:00 PM 3:00 AM 4:00 AM 61 61 61 61 62 61 61 61 63 61 61 61	62	3/7/2018	7:00 PM	11
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Leq) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 64 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 8 4:00 PM 3/7/2018 61 9 5:00 PM 3/7/2018 61	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 10:00 AM 10:00 AM 1 9:00 AM 12:00 PM 2 10:00 AM 12:00 PM 3 11:00 AM 1:00 PM 2 10:00 AM 1:00 PM 3 11:00 AM 1:00 PM 2:00 PM 9:00 AM 3:00 PM 4 10:00 AM 3:00 PM 1:00 PM 3:00 PM 3:00 PM 1:00 PM 3:00 PM 3:00 PM 4 12:00 PM 3:00 PM 3:00 PM 3:00 PM 3:00 PM 3:00 PM 3:00 PM 3:00 AM 4:00 PM 3:00 AM 64 5:00 PM 64 61 3:00 AM 61 61 4:00 PM 3:00 AM 62 5:00 PM 61 61 5:00 AM 61 61 61 61 61 61 61 61 62 61 61	63	3/7/2018	6:00 PM	10
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Leq) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 64 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61 8 4:00 PM 3/7/2018 61	8 4 9:00 AM 1 9:00 AM 1 1 10:00 AM 1 1 11:00 AM 1 11:00 AM 12:00 PM 1 9:00 AM 10:00 AM 1 9:00 AM 10:00 AM 1 9:00 AM 10:00 PM 1:00 PM 9:00 AM 3:00 PM 1:00 PM 1:00 PM 3:00 PM 1:00 PM 3/7/2018 9:00 PM 1:00 PM 3/7/2018 10:00 AM 3:00 PM 3/7/2018 64 4:00 AM 3/7/2018 61 3:00 AM 61 61 3:00 AM 61 61 4:00 AM 61 61 5:00 AM 61 61 61 61 61 61 61 61 61 61 61 61 61 61	62	3/7/2018	5:00 PM	9
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Leq) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 64 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61 7 3:00 PM 3/7/2018 61	Table 2.14-9: Long-Term 24-Hour of Day 9:00 AM 10:00 AM 11:00 AM 11:00 AM 12:00 PM 11:00 AM 10:00 AM 11:00 AM 12:00 PM 11:00 AM 10:00 AM 11:00 AM 10:00 PM 11:00 AM 10:00 PM 11:00 AM 3:00 PM 11:00 AM 3:00 PM 11:00 AM 3/7/2018 11:00 PM 3/7/2018 11:00 AM 3/7/2018 11:00 AM 3/7/2018 11:00 PM 3/7/2018 10:00 AM 3/7/2018 10:00 AM 3/7/2018 10:00 AM 3/7/2018 10:00 AM 6:00 AM 10:00 AM 3/7/2018 10:00 AM 6:1 10:00 AM 6:1 </td <td>61</td> <td>3/7/2018</td> <td>4:00 PM</td> <td>8</td>	61	3/7/2018	4:00 PM	8
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Leq) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 63 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61 6 2:00 PM 3/7/2018 61	Hour of Day 9:00 AM 1 9:00 AM 10:00 AM 10:00 AM 11:00 PM 11:00 AM 11:00 AM 11:00 PM 11:00 AM 30:00 PM 11:00 AM 30:00 AM 30:00 AM 30:00 AM 11:00 PM 11:00 PM 11:00 PM 11:00 PM 11:00 PM 11:00 AM 30/7/2018 64 61 61	61	3/7/2018	3:00 PM	7
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Leq) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 64 4 12:00 PM 3/7/2018 61 5 1:00 PM 3/7/2018 61	Hour of Day 9:00 AM 1 9:00 AM 1 10:00 AM 12:00 PM 12:00 PM 10:00 AM 10:00 AM 10:00 AM 12:00 PM 10:00 AM 10:00 AM 10:00 AM 10:00 PM 10:00 AM 10:00 PM 10:00 AM 3:00 PM 10:00 AM 3:00 PM 11:00 PM 3:00 PM 10:00 AM 3:00 PM 10:00 AM 3:00 PM 11:00 PM 3:00 PM 10:00 AM 3:00 AM 10:00 AM 6:00 AM	61	3/7/2018	2:00 PM	6
Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6) Hour of Day Start Time Date Noise Level (dBA Leq) 1 9:00 AM 3/7/2018 64 2 10:00 AM 3/7/2018 64 3 11:00 AM 3/7/2018 63 4 12:00 PM 3/7/2018 61	Hour of Day 9:00 AM 10:00 AM 10:00 AM 11:00 AM 11:00 AM 12:00 PM 10:00 PM 2 10:00 AM 3 10:00 AM 4 10:00 AM 4 10:00 AM 4 10:00 AM 10:00 AM 10:00 PM 10:00 AM 10:00 PM 10:00 AM 3:00 AM 10:00 AM 4:00 AM 10:00 AM 6:00 AM	61	3/7/2018	1:00 PM	თ
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Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1453 North Highland Street, Orange, CA (LT-6)	Table 2.14-9: Long-Term 24-Hour Noise Level Measurement Results at 1:00 PM 1453 North Highland Street, Orange, CA (LT-6)	Noise Level (dBA Leq)	Date	Start Time	Hour of Day
	9:00 AM 10:00 AM 11:00 AM 12:00 PM 2:00 PM 3:00 PM 4:00 PM 5:00 PM 5:00 PM 9:00 PM 10:00 PM 11:00 PM 12:00 AM 1:00 AM 3:00 AM 3:00 AM 5:00 AM 3:00 AM 3:00 AM 3:00 AM	sment Results at .T-6)	Hour Noise Level Measure and Street, Orange, CA (L	2.14-9: Long-Term 24-F 1453 North Highl	Table 2
		2:00 AM 3:00 AM 4:00 AM 5:00 AM 6:00 AM 7:00 AM 8:00 AM	6:00 PM 7:00 PM 8:00 PM 9:00 PM 10:00 PM 11:00 PM 12:00 AM	10:00 AM 11:00 AM 12:00 PM 1:00 PM 2:00 PM 3:00 PM 4:00 PM	9:00 AM



Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

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18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	ω	2	1	Hour of Day
3:00 AM	2:00 AM	1:00 AM	12:00 AM	11:00 PM	10:00 PM	9:00 PM	8:00 PM	7:00 PM	6:00 PM	5:00 PM	4:00 PM	3:00 PM	2:00 PM	1:00 PM	12:00 PM	11:00 AM	10:00 AM	Start Time
3/8/2018	3/8/2018	3/8/2018	3/8/2018	3/7/2018	3/7/2018	3/7/2018	3/7/2018	3/7/2018	3/7/2018	3/7/2018	3/7/2018	3/7/2018	3/7/2018	3/7/2018	3/7/2018	3/7/2018	3/7/2018	Date
60	57	58	60	61	63	64	65	66	68 a	68 ª	68 a	67	67	67	67	67	67	Noise Level (dBA L _{eq})





Figure 2.14-7. Long-term 24-hour Noise Level Measurement at LT-6 Notes: dBA L_{eq}; equivalent continuous sound level measured in A-weighted decibels Figure 2.14-9, Sheet 19 Source: Compiled by LSA (2018). ^a Bold numbers represent the peak traffic noise hours.

Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

24	23	22	21	20	19	Hour of Day	
9:00 AM	8:00 AM	7:00 AM	6:00 AM	5:00 AM	4:00 AM	Start Time	
3/8/2018	3/8/2018	3/8/2018	3/8/2018	3/8/2018	3/8/2018	Date	
66	67	68 a	67	64	63	Noise Level (dBA L _{eq})	

Notes: dBA L_{eq}: equivalent continuous sound level measured in A-weighted decibels Figure 2.14-9, Sheet 21 Source: Compiled by LSA (2018).

Bold numbers represent the peak traffic noise hours





2.14.2.3 **Existing Noise Levels**

auxiliary lanes, 1,000 vplph on freeway ramps, and 750 vplph on local roadways. The higher given lane under such conditions. The worst-case traffic volumes are assumed to be 1,950 given roadway travel at free-flowing traffic conditions and is assumed to be LOS C. Traffic whichever is lower. The worst-case traffic condition is generally loudest when vehicles on a either the worst-case traffic operations (prior to speed degradation) or peak-hour traffic volumes, from the Final Traffic Volume Report (February 2018). lower than the worst-case traffic volume. The peak-hour traffic volumes for SR 55 were obtained vehicles per lane per hour (vplph) on the freeway mainline, 1,500 vplph on freeway HOV and volume assumptions are based on the maximum number of vehicles that can typically travel in a The existing and future 2055 traffic noise levels at all 327 receptor locations were modeled using (a.m. or p.m.) peak-hour traffic volume was selected when the higher peak-hour traffic volume is



Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 1 of 21)

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Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 2 of 21)

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Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 3 of 21)

2.14-27



Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 4 of 21)



Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 5 of 21)



Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 6 of 21)



Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 7 of 21)



Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 8 of 21)

2.14-37



Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 9 of 21)







Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 11 of 21)





Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 12 of 21)





Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

2.14-47



Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 14 of 21)







Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 16 of 21)



Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 17 of 21)





2.14-57

SR 55 (I-5 to SR 91) Initial Study/Environmental Assessment

12-ORG-55 PM 10.4/R17.9 EA No. 0K720K







2.14-59






Figure 2.14-9. Monitoring and Modeled Receptor Locations (Sheet 21 of 21)

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SR 55 (I-5 to SR 91) Initial Study/Environmental Assessment

2.14.3 Environmental Consequences

The proposed project is considered a Type 1 project because it would use federal aid to add a through-traffic lane in each direction to the existing SR 55. A noise analysis is required for all Type 1 projects. Therefore, noise impacts of the Build Alternative are analyzed below.

2.14.3.1 Temporary Impacts

Build Alternative

Two types of short-term noise impacts would occur during project construction. The first type would be from construction crew commutes and the transport of construction equipment and materials to the project site and would incrementally raise noise levels on access roads leading to the site. The pieces of heavy equipment for grading and construction activities would be moved on site, would remain for the duration of each construction phase, and would not add to the daily traffic volume in the project vicinity. A high single-event noise exposure potential at a maximum level of 75 dBA L_{max} from trucks passing at 50 feet would exist. However, the projected construction traffic would be minimal when compared to existing traffic volumes on SR 55 and other affected streets, and its associated long-term noise level change would not be perceptible and not cause long-term direct or indirect impacts. Therefore, short-term construction-related worker commutes and equipment transport noise impacts would be less than substantial.

The second type of short-term noise impact is related to noise generated during roadway construction. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated and the noise levels in the project area as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 2.14-11 lists typical construction equipment noise levels (L_{max}) recommended for noise impact assessments based on a distance of 50 feet between the equipment and a noise receptor.

Noise from construction activities may directly affect areas in the immediate vicinity of construction. Typical noise levels at 50 feet from an active construction area range up to 86 dBA L_{max} during the noisiest construction phases. The site preparation phase, which includes grading and paving, tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery (e.g., backfillers, bulldozers, and front loaders). Earthmoving and compacting equipment includes compactors, scrapers, and graders.

Type of Equipment	Actual Maximum Sound Levels at 50 ft (dBA)
Backhoe	78
Crane	81
Dozer	82
Drill Rig Truck	79
Dump Truck	76
Excavator	81
Flat Bed Truck	74
Front End Loader	79
Generator	81
Impact Pile Driver	101
Jackhammer	89
Pickup Truck	75
Pneumatic Tools	85
Pumps	81
Roller	80
Scraper	84

Table 2.14-11: Typical Construction Equipment Noise Levels

Notes: dBA: A-weighted decibels; FHWA: Federal Highway Administration; ft: foot/feet Source: Roadway Construction Noise Model (FHWA 2006).

The construction of the proposed project is expected to require the use of scrapers, bulldozers, and water trucks/pickup trucks. Noise associated with the use of construction equipment is estimated between 75 dBA L_{max} and 84 dBA L_{max} at a distance of 50 feet from the active construction area for the grading phase. As shown in Table 2.14-11, the maximum noise level generated by each scraper is assumed to be approximately 84 dBA L_{max} at 50 feet from the scraper in operation. Each bulldozer would generate approximately 82 dBA L_{max} at 50 feet. The maximum noise level generated by water trucks and pickup trucks is approximately 75 dBA L_{max} at 50 feet from these vehicles. Each doubling of the sound source with equal strength increases the noise level by 3 dBA. Each piece of construction equipment operates as an individual point source. The worst-case composite noise level at the nearest residence during this phase of construction would be 86 dBA L_{max} (at a distance of 50 feet from an active construction area).

The closest sensitive receptors are within 50 feet of project construction areas. Sensitive receptor locations may be subject to short-term noise higher than 86 dBA L_{max} that is generated by construction activities along the project alignment, thus subject to temporary direct noise impacts. Project Feature PF-N-1 requires compliance with Caltrans Standard Specifications Section 14-8.02 (Caltrans 2015d) and would minimize construction noise impacts on sensitive land uses adjacent to the project site. Construction noise from the contractor's operations between the hours of 9:00 p.m. and 6:00 a.m. shall not exceed 86 dBA L_{max} at a distance of 50 feet.

PF-N-1: The control of noise from construction activities will conform to the California Department of Transportation (Caltrans) Standard Specifications, Section 14-8.02, "Noise Control." The nighttime noise level from the Contractor's operations,

between the hours of 9:00 p.m. and 6:00 a.m., will not exceed 86 A-weighted decibels (dBA) one-hour A-weighted equivalent continuous sound level ($L_{eq}(h)$) at a distance of 50 feet. In addition, the Contractor would equip all internal combustion engines with a manufacturer-recommended muffler and will not operate any internal combustion engine on the job site without the appropriate muffler.

No Build Alternative

The No Build Alternative would not result in the construction of improvements within the project area and, therefore, would not result in temporary noise effects.

2.14.3.2 Permanent Impacts

The Noise Study Report (September 2018) was conducted to determine the future traffic noise impacts at receptors along SR 55. Potential long-term noise impacts associated with project operations are solely from traffic noise. Traffic noise was evaluated for the worst-case traffic condition. Using coordinates obtained from the topographic maps, a total of 327 receptor locations associated with existing single- and multifamily residences, pools associated with multifamily residences, churches, playgrounds associated with churches, a classroom associated with a church, hospitals, restaurants, gas stations, a park, a maintenance facility, vacant land, offices, commercial, and retail uses were evaluated in the noise model. Implementation of this Project is not anticipated to result in permanent indirect or direct impacts.

Build Alternative

Future traffic noise levels for all 327 receptor locations were determined with existing walls using the worst-case traffic operations (prior to speed degradation) or the future (2055) peak-hour traffic volumes, whichever is lower. Future traffic volumes on SR 55 and local roadways were obtained from the Final Traffic Volume Report (February 2018). Table B-1 and B-2 in Appendix B of the Noise Study Report summarizes the traffic noise modeling results for the Existing, Future No Build, and Build Alternatives. The modeled future noise levels with the project were compared to the modeled existing noise levels (after calibration) from Traffic Noise Model (TNM) version 2.5 to determine whether a substantial noise increase would occur. The modeled future noise levels were also compared to the NAC under Activity Categories B, C, D, and E to determine whether a traffic noise impact would occur.

Traffic noise impacts occur when either of the following takes place: (1) if the traffic noise level at a sensitive receptor location is predicted to "approach or exceed" the NAC or (2) if the predicted future noise level with the project substantially exceed the existing noise level (defined as a 12 dBA or more increase). When traffic noise impacts occur, noise abatement measures must be considered. Of the 327 modeled receptors, three receptors under the Build Alternative would approach or exceed the NAC. No receptor would experience a substantial noise increase of 12 dBA or more over its corresponding existing noise levels. The receptor locations listed below would be or would continue to be exposed to noise levels that approach or exceed the NAC under the Build Alternative:

• **Receptor R-3**: This receptor location represents the outdoor seating area of a restaurant located along 4th Street on the southbound side of SR 55, between First Street and 4th

Street. Currently, no existing wall shields the outdoor seating area. Noise barriers were not modeled to shield the outdoor seating area of the restaurant because a barrier would not be feasible due to the driveway access onto 4th Street. No permanent direct noise impacts are anticipated.

- **Receptor R-53**: This receptor location represents an outdoor seating area of an office building located along Tustin Avenue on the southbound side of SR 55 between 4th Street and 17th Street. Currently, no existing wall shields the outdoor seating area. One noise barrier (Noise Barrier No. 1.1) was modeled along the State right-of-way on the southbound side of SR 55 to shield the seating area, therefore minimizing direct and indirect noise impacts.
- Receptor R-82: This receptor location represents an existing single-family residence located along Heights Drive on the northbound side of SR 55 between Irvine Boulevard and 17th Street. Currently, an 8.5- to 10.5-foot-high existing wall shields the residence. Noise barriers were not modeled to shield this residence because this receptor approaches the NAC due to traffic on Yorba Street and not from traffic on SR 55, as shown in Appendix B Table B-1 in Noise Study Report. The existing wall is anticipated to minimize any direct or indirect impacts to noise.

Feasibility and Reasonable Allowance

Section 3 of the Protocol states that a minimum noise reduction of 5 dBA must be achieved at the impacted receptors in order for the proposed noise abatement measure to be considered feasible. Greater noise reductions are encouraged if they can be reasonably achieved. Feasibility may also be restricted by the following factors: (1) topography, (2) access requirement for driveways, (3) presence of local cross-streets, (4) underground utilities, (5) other noise sources in the area, and (6) safety considerations.

Table 2.14-12 summarizes the feasibility of Noise Barrier No. 1.1 and lists the noise barrier heights, approximate lengths, the noise attenuation, the number of benefited units/receptors, the total reasonable allowance, beginning and ending station number, and the beginning and ending top of wall elevation under the Build Alternative. Table 2.14-12 shows that Noise Barrier No. 1.1 is feasible starting at 6 feet. Table 2.14-12 also shows predicted noise levels, insertion loss, and the number of benefited receptors at analyzed barrier heights for the Build Alternative.

The reasonableness of a noise barrier is determined by comparing the estimated cost of constructing the noise barrier against the total reasonable allowance. The total reasonable allowance is determined based on the number of benefited residences/receptors multiplied by the reasonable allowance per residence/receptor. Additionally, in accordance with the Caltrans Traffic Noise Analysis Protocol, each noise barrier must provide at least 7 dBA of noise reduction at one or more benefited residence/receptor to be considered reasonable. Therefore, if the estimated noise barrier construction cost exceeds the total reasonable allowance or was not predicted to provide at least 7 dBA of noise reduction at one or more benefited residence/receptors, the noise barrier is determined to be not reasonable.

Noise Barrier No. 1.1 was found to be acoustically feasible; reasonable cost allowances were calculated by multiplying the number of benefited receptors by \$95,000. Table 2.14-12 summarizes the results at receptor location for the noise barrier evaluated in detail for this project.

Noise Barrier No.	Height (ft)	Approximate Length (ft)	Noise Attenuation (dBA)	Number of Benefited Receptors/ Units ¹	Total Reasonable Allowance ²	Noise Barrier Location	Noise Barrier Station Number Begin	Noise Barrier Station Number End	Top of Wall Elevation (ft) Begin	Top of Wall Elevation (ft) End
1.1	6	34	5.3	1	\$95,000	ROW	612+67	613+01	174	174
1.1	8 ³	34	6.5	1	\$95,000	ROW	612+67	613+01	176	176
1.1	10	34	6.9	1	\$95,000	ROW	612+67	613+01	178	178
1.1	12	34	7.1	1	\$95,000	ROW	612+67	613+01	180	180
1.1	14	34	7.2	1	\$95,000	ROW	612+67	613+01	182	182
1.1	16	34	7.2	1	\$95,000	ROW	612+67	613+01	184	184
1.1	18	34	7.3	1	\$95,000	ROW	612+67	613+01	186	186
1.1	20	34	7.3	1	\$95,000	ROW	612+67	613+01	188	188
1.1	22	34	7.3	1	\$95,000	ROW	612+67	613+01	190	190

Table 2.14-12: Summary of Feasible Noise Barriers from the Noise Study Report

Notes: dBA: A-weighted decibels; ft: foot/feet; ROW: right-of-way
Source: LSA Associates, Inc. (September 2018a).
¹ Number of receptors/units that are attenuated by5 dBA or more by the modeled barrier.
² Calculated by multiplying the number of benefited receptors by \$95,000 (the dollar amount per benefited receptor/unit).
³ Denotes the minimum wall height required to break the line-of-sight between the receptor and a truck exhaust stack.

The design of noise barriers presented is preliminary and has been conducted at a level appropriate for environmental review and not for final design of the project. Preliminary information on the physical location, length, and height of noise barriers is provided below. If pertinent parameters change substantially during the final project design, preliminary noise barrier design may be modified or eliminated from the final project. A final decision on the construction of the noise abatement will be made upon completion of the project design.

Based on the studies completed to date, Caltrans intends to incorporate noise abatement in the form of barriers. The feasible and reasonable noise barrier for Build Alternative is shown in Table 2.14-12. The location of the proposed barrier is shown on Figure 2.14-10. These measures may change based on input received from the public. If conditions have substantially changed during final design, noise abatement may not be necessary. The final decision on noise abatement will be made upon completion of project design.

The following is a discussion of the noise abatement measures considered for the Build Alternative where traffic noise impacts are predicted.

Noise Barrier No. 1.1

A 34-foot-long barrier along the State right-of-way on the southbound side of SR 55 was analyzed to shield Receptor R-53. Table 2.14-12 shows the results of the analysis. Noise Barrier No. 1.1 is composed of a new barrier and was evaluated from 6 feet to 22 feet high in 2-foot increments.

Figure 2.14-3 shows the location of Noise Barrier No. 1.1. Table 2.14-12 lists the highest noise barrier reduction, the number of benefited receptors, the reasonable allowance per benefited receptor, and the total reasonable allowance for each barrier height.

Noise Barrier No. 1.1 was determined to be reasonable. Mitigation measure PF-NOI-1 requires noise abatement in the form of a noise barrier and would minimize direct and indirect operational noise impacts on the sensitive land use at R-53.

PF-N-2 Noise Barrier No. 1.1 was determined to be feasible and reasonable. This noise barrier will be considered for construction. The final decision on construction of the noise barrier will be made upon receipt of the response to the noise barrier survey by the property owner and during final design.

Before completion of final design, coordination with the affected property owners would be conducted in order to determine if they are in favor of the noise barrier and if they are will to donate the right-of-way to the State for construction of the noise barrier.

During the noise barrier survey process, one response was received for Noise Barrier 1.1. Based on the result of the survey, the benefitted receptor does not support inclusion of the noise barrier. As a result, Caltrans does not intend to incorporate Noise Barrier No. 1.1 as part of the project.



Figure 2.14-10. Location of Noise Barrier No. 1.1

Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

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SR 55 (I-5 to SR 91) Initial Study/Environmental Assessment

Nonacoustical Factors

Nonacoustical factors relating to feasibility that must be considered during the construction of noise barriers include: geometric standards, safety, maintenance, security, drainage, geotechnical considerations, and utility relocations.

The nonacoustical factors relating to feasibility of Noise Barrier No. 1.1 are:

- Geometric Standards: Noise Barrier No. 1.1 would not affect the geometric standards of adjacent roadways.
- Safety: Noise Barrier No. 1.1 would not affect sight distance for vehicular or pedestrian traffic.
- Maintenance: No temporary construction easements would be required for Noise Barrier No. 1.1. In addition, Caltrans would be responsible for maintenance of Noise Barrier No. 1.1.
- Security: Noise Barrier No. 1.1 would be in the same alignment as an existing fence and would not change the security conditions of the site. The existing fence will remain or will be replaced in kind.
- Drainage: Noise Barrier No. 1.1 would not affect the existing and proposed drainage system.
- Geotechnical Considerations: Noise Barrier No. 1.1 would be constructed at a similar grade to the existing condition. In addition, it would be partially constructed in native soil and partially in engineered fill.
- Utility Relocations: No utility impacts are anticipated as a result of Noise Barrier No. 1.1.

No Build Alternative

Potential long term direct and indirect noise effects under the No Build Alternative would be solely from traffic noise. Future No Build noise levels are shown in Appendix B of the Noise Study Report. Of the 327 modeled receptor locations, one receptor (R-53) would continue to approach or exceed the NAC under the future No Build condition.

2.14.4 Avoidance, Minimization, and/or Abatement Measures

The project will incorporate Project Feature PF-N-1, outlined in Section 2.14.3.1, to help avoid and/or minimize potential noise impacts. No additional avoidance, minimization, and/or mitigation measures other than the Standard Project Features are required.

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BIOLOGICAL ENVIRONMENT

2.15 Natural Communities

2.15.1 Regulatory Setting

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

No habitat areas have been designated as critical habitat under the Federal Endangered Species Act within the project area. Wetlands and other waters are also discussed below in Section 2.16, Wetlands and Other Waters.

2.15.2 Affected Environment

Information presented in this section was obtained from the Natural Environment Study/minimal impacts report (NES [mi]) (January 2019).

2.15.2.1 Local Requirements

Orange County Transportation Authority Measure M2 (Natural Communities Conservation Plan/Habitat Conservation Plan)

In 2006, Orange County voters approved the renewal of Measure M, effectively extending the half-cent sales tax to provide funding for transportation projects and programs in the county. As part of the renewed Measure M (or Measure M2), a portion of the M2 freeway program revenues were set aside for the M2 Environmental Mitigation Program (EMP) to provide funding for programmatic mitigation to offset impacts from the freeway projects in the 13 freeway segments covered by Measure M2. The proposed project is included as one of the covered projects under the NCCP/HCP (or Plan) and is referred to as Project F. OCTA prepared the Plan as a mechanism to offset potential project-related effects on threatened and endangered species and their habitats in a comprehensive manner. The Plan achieves higher value conservation than what would be expected through project-by-project mitigation in exchange for a streamlined project review and permitting process for the Measure M2 freeway program as a whole.

The Plan fulfills the requirements for issuance of permits from CDFW and U.S. Fish and Wildlife Service (USFWS), collectively referred to as the Wildlife Agencies, which allows for the take of threatened and endangered species and their habitats. OCTA is the sole Permittee receiving permits from the Wildlife Agencies with terms of 40 years from the date of issuance. Caltrans, as the owner and operator of the state highway system, is included as a Participating Special Entity (ICF 2016).

2.15.2.2 Biological Study Area

The Study Area assessed for biological resources is referred to as the biological survey area (BSA). The BSA for sensitive biological resources included a 0.5-mile buffer from the centerline of the proposed project to capture any potential direct and indirect impacts resulting from the proposed project (approximately 6.5 linear miles along SR 55) and is shown in Figure 2.15-1 (maps 1 through 9). The northern limit of the BSA is in the City of Anaheim at SR 91. The BSA's southern terminus is south of the I-5/SR 55 interchange in the City of Tustin.

The proposed project segment of SR 55 and the BSA traverses parts of the cities of Santa Ana, Tustin, Orange, and Anaheim in Orange County. The BSA comprises mostly urban settings consisting of residential, recreation, commercial, and undeveloped land uses. Santiago Creek passes under SR 55 just north of SR 22 toward the middle of the BSA.

2.15.2.3 Vegetation

Disturbed Riparian

The majority of the right-of-way within the proposed project consists of the existing SR 55 corridor, including freeway lanes, retaining and sound walls, median strips and other barriers, on-ramps and off-ramps, two freeway interchange systems (with SR 22 and I-5), connector lanes, arterial roadway under- and overcrossings, and various infrastructure associated with SR 55. These developed areas do not support any vegetation or provide resources that would be of value to wildlife in general. Vegetation mapping is provided in Figure 2.15-1 (maps 1 through 9). One disturbed riparian woodland/scrub natural community was observed within the Study Area. The disturbed riparian area occurs along Santiago Creek primarily between SR 55 and Chapman Avenue. A remnant of riparian vegetation within Santiago Creek is best described as a black willow-seep willow alliance (*Salix goodingii-Baccharis salicifolia* association) based on descriptions in *A Manual of California Vegetation, Second Edition* (Sawyer et al. 2009). The black willows represent a riparian habitat with near permanent subsurface water, and the seep willow represents disturbed drier riparian habitat.

Based on the three plant surveys, 65 species of plants were observed growing within the banks of Santiago Creek in the vicinity of SR 55. Many of the species are escaped ornamentals (19 species) or non-native weeds (31 species) (see Table 2.15-1). Much of the banks are rip-rap lined and lack vegetation. The channel bottom contains non-native weedy annuals which were all dried when the plant survey was conducted. Two patches of riparian vegetation are separated artificially by man-made disturbances. One is southwest of the Chapman Avenue bridge, and the other is north of Chapman Avenue.

Most of the Santiago Creek survey area does not contain loose sand; the soil texture is clay. The soil and rocks are cemented by the high concentration of calcium and sodium salts in the main channel bottom. Numerous paths are present within the riparian vegetation along with large amounts of trash, and the quality of riparian vegetation is low. The native vegetation occurs as isolated patches of mature individuals.



Figure 2.15-1. Vegetation Map (1 of 9)



Figure 2.15-1. Vegetation Map (2 of 9)



Figure 2.15-1. Vegetation Map (3 of 9)

Landscape Ornamental Ruderal

EA 0K/200 Federal Project Number: 1213000149 Project Limits: 12-ORA 55 PM 10.4 – R17.9



Figure 2.15-1. Vegetation Map (4 of 9)



Figure 2.15-1. Vegetation Map (5 of 9)

Orange County Parcels Vegetation Classification: Landscape Ornamental EA 0K7200 Federal Project Number: 1213000149 Project Limits: 12-ORA-55 PM 10.4 – R17.9



Figure 2.15-1. Vegetation Map (6 of 9)



Figure 2.15-1. Vegetation Map (7 of 9)



Figure 2.15-1. Vegetation Map (8 of 9)

Orange County Parcels Vegetation Classification: Landscape Ornamental EA 0K7200 Federal Project Number: 1213000149 Project Limits: 12-ORA-55 PM 10.4 – R17.9



Figure 2.15-1. Vegetation Map (9 of 9)

Scientific Name	Common Name Species Type		Abundance	
Abelia grandiflora	Chinese abelia	ornamental	LC	
Acacia baileyi	Bailey's acacia	ornamental	R	
Ailanthus altissimum	tree-of-heaven	non-native weed	R	
Artemisia californica	coast sagebrush	NA	UN	
Arundo donax	giant reed	non-native weed	R	
Asclepias curassavicum	milkweed	non-native weed	R	
Avena barbata	slender wild oats	non-native weed	FC	
Avena fatua	wild oats	non-native weed	FC	
Baccharis pilularis	coyote bush	NA	R	
Baccharis salicifolia	seep willow	NA	FC	
Bebbia juncea	sweet bush	NA	LC	
Bidens pilosa	tickseed	non-native weed	R	
Bougainvillea glabra	bougainvillea	ornamental	R	
Bromus diandrus	ripgut brome	non-native weed	FC	
Bromus madritensis rubens	red brome	non-native weed	FC	
Bromus carthacicus	rescue grass	non-native weed	R	
Carpobrotus edulis	pickleweed iceplant	ornamental	LC	
Cassia sp.	cassia	ornamental	LC	
Centaurea melitensis	yellow star thistle	non-native weed	R	
Chenopodium album	lambsquarter	non-native weed	R	
Chenopodiastrum murale	nettleleaf goosefoot	non-native weed	R	
Convovulus arvensis	field bindweed	non-native weed	R	
Croton setigerus	doveweed	NA	UN	
Cupaniopsis anacardioides	carrotwood	ornamental	UN	
Cynadon dactylon	Bermuda grass	non-native weed	FC	
Cyperus esculentus	yellow nutsedge	non-native weed	UN	
Datura wrightii	Jimsonweed	non-native weed	R	
Descaurainia sophia	flixweed	non-native weed	UN	
Encelia california	California encelia	NA	UN	
Erigeron canadensis	Canadian horseweed	non-native weed	FC	
Eriogonum fasciculatum	bush buckwheat	NA	FC	
Eucalyptus camaldulensis	red river gum	ornamental	UN	
Eucalyptus citriodora	lemon gum	ornamental	R	
Eucalyptus viminalis	ribbon gum	ornamental	UN	
Euphorbia maculata	spotted spurge	non-native weed	FC	
Ficus carica	edible fig	ornamental	R	
Ficus elastica	rubber plant	ornamental	R	
Ficus repens	creeping fig	ornamental	LC	
Foeniculum vulgare	fennel	non-native weed	UN	
Fraxinus latifolia	Oregon Ash	ornamental	UN	
Gazania rigens	gazania	ornamental	FC	
Hedera canariensis	Algerian ivy	ornamental	LC	

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Table 2.15-1: Plants	Observed	within	Study	Area
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Scientific Name	Common Name	Species Type	Abundance
Helianthus annuus	annual sunflower	non-native weed	UN
Helmenthotheca echioides	bristly ox tongue	non-native weed	UN
Heliotropium curasavicum	Chinese pusley	NA	R
Heterotheca grandiflora	telegraph weed	NA	R
Hirschfeldia incana	biennial mustard	non-native weed	UN
Isocoma menziesii	coastal goldenbush	NA	LC
Juglans sp.	walnut	ornamental	R
Koelreuteria paniculata	golden raintree	ornamental	FC
Lactuca serriola	prickly lettuce	non-native weed	UN
Lagerstroemia indica	crape myrtle	ornamental	R
Lantana montevidensis	lantana	ornamental	R
Lepidospartum squamatum	chaparral broom	NA	UN
Leptochloa fasciculatum	bearded sprangletop	non-native weed	UN
Lobularia maritima	sweet alyssum	ornamental	R
Lonicera japonica	Japanese honeysuckle	ornamental	UN
Magnolia grandiflora	southern magnolia	ornamental	R
Malva parviflora	cheeseweed	non-native weed	UN
Marrubium vulgare	horehound	non-native weed	UN
Melaleluca quinquervia	paperbark tree	ornamental	UN
Melilotus albus	white sweetclover	non-native weed	R
Melilotus officinalis	yellow sweetclover	non-native weed	UN
Mirabilis coccinea	four o'clock	ornamental	LC
Morus alba	fruitless mulberry	ornamental	R
Myoporum parviflorum prostratum	prostrate myoporum	ornamental	FC
Nerium oleander	oleander	ornamental	UN
Nicotiana glauca	Indian tobacco	non-native weed	UN
Olea europa	European olive	ornamental	R
Opuntia littoralis	coast prickly pear	NA	UN
Paspalum dilatatum	Dallis grass	non-native weed	UN
Pennisetum clandestimum	Kikuyu grass	non-native weed	UN
Pennisetum setaceum	fountain grass	non-native weed	UN
Penstemon sp.	beard tongue	NA	R
Phoenix dactylifera	Phoenix date palm	ornamental	R
Photinia fraseri	Fraser's photinia	ornamental	R
Pinus canariensis	Canary Island pine	ornamental	UN
Pipantherum miliaceum	smilo grass	non-native weed	FC
Platanus racemosa	California sycamore	NA	R
Plantago lanceolata	narrow leaf ribgrass	non-native weed	R
Plantago major	broadleaf ribgrass	non-native weed	R
Polygonum arenastrum	knotweed	non-native weed	R
Polypogon monspeliensis	rabbitsfoot grass	non-native weed	С
Quercus agrifolia	coast live oak	NA	UN
Quercus ilicifolia	holly oak	ornamental	R

Scientific Name	Common Name	Species Type	Abundance
Raphanus sativa	wild radish	non-native weed	UN
Raphiolepis indica	India hawthorn	ornamental	LC
Ricinus communis	castor bean	non-native weed	R
Rumex obtusifolius	bitter dock	non-native weed	UN
Salix gooddingii (var variabilis)	black willow	NA	LC
Salvia mellifera	black sage	NA	UN
Salsola tragus	tumbleweed	non-native weed	UN
Schinus terebenthifolius	Brazilian pepper	ornamental	R
Schinus molle	California pepper tree	ornamental	UN
Sisymbrium altissimum	tumble mustard	non-native weed	R
Sonchus oleracea	sowthistle	non-native weed	С
Tradescantia fluminensis	small-leaf spiderwort	ornamental	LC
Typha sp.	cattails (sterile)	NA	UN
Ulmus americana	American elm	ornamental	R
Ulmus parvifolia	Chinese elm	ornamental	R
Urtica urens	stinging nettle	NA	R
Vitis sp.	ornamental grape	ornamental	LC
Yucca gloriosa	soft-tipped yucca	ornamental	UN
Washingtonia mexicana	Mexican fan palm	ornamental	R

Notes: NA: not applicable

Abundance: LC: Locally Common; C: Common; UN: Uncommon; R: rare

Ornamental Landscaping

Ornamental landscaping occurs between streets and on/off ramps, along bike paths, at parks, and along drainages. In well-irrigated areas trees, shrubs, and vegetated ground cover persist. In areas where irrigation sprinklers do not do an adequate job, the ground cover in the landscaping reverts to ruderal. Many of the ornamental species in or along Santiago Creek have reseeded from ornamental landscaping along the bike path and persist because the soil remains damp near the bridges for much of the dry season.

Wildlife Movement

The opportunity for wildlife movement within the Study Area is minimal. Santiago Creek may provide for wildlife movement of common animal species associated with the proposed project area such as coyotes, raccoons, ground squirrels, and other small mammals. Nearest project improvements to Santiago Creek are approximately 1.0 mile south near the eastbound SR 22 to northbound SR 55 connector and approximately 3.0 miles north at the Katella/SR 55 southbound on-ramp.

2.15.3 Environmental Consequences

2.15.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

Local Requirements

The proposed project would comply with the criteria set forth in the OCTA NCCP/HCP and the USACE Programmatic Individual Permit. Therefore, local requirements would be met, and no direct or indirect impacts would occur.

Natural Communities Disturbed Riparian

No habitats or natural communities of special concern would be directly or indirectly impacted by the proposed project. Although Santiago Creek crosses SR 55 within the Study Area and contains riparian vegetation, the nearest improvements to Santiago Creek are approximately 1.0 mile south near the eastbound SR 22 to the northbound SR 55 connector and approximately 3.0 miles north at the Katella Avenue/SR 55 southbound on-ramp. No construction would take place within the section of SR 55 that crosses the creek; and, therefore, no impacts to riparian vegetation would occur.

Wildlife Movement

As described above, no construction would take place within the section of SR 55 that crosses Santiago Creek, which may provide for wildlife movement of common animal species such as coyotes, raccoons, ground squirrels, and other small mammals. Therefore, direct impacts to wildlife movement are not anticipated to occur as a result of the proposed project. Additionally, indirect impacts to wildlife movement are not anticipated since construction activities would occur 1 to 3 miles away from the creek.

No Build Alternative

The No Build Alternative would not result in construction or improvements within the project area and, therefore, would not result in temporary or permanent impacts on natural communities.

2.15.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

The Build Alternative would not result in any permanent impacts to natural communities of special concern. Indirect or secondary impacts are not anticipated to occur.

No Build Alternative

The Build Alternative would not result in any direct permanent impacts to natural communities of special concern. No indirect or secondary impacts on these resources would result from implementation of the No Build Alternative.

2.15.4 Avoidance, Minimization, and/or Mitigation Measures

2.15.4.1 Local Requirements

The proposed project would implement the measures in OCTA's NCCP/HCP. Applicable measures are provided in Appendix D of the Natural Environment Study (minimal impacts) (January 2019) and included in the Avoidance, Minimization, and or Mitigation summary in Appendix C of this document.

2.15.4.2 Natural Communities

Disturbed Riparian

No avoidance or minimization measures are proposed, as no impacts to riparian habitat or other natural communities would occur.

Wildlife Movement

No avoidance or minimization measures are proposed, as no impacts to wildlife movement would occur.

2.16 Wetlands and Other Waters

2.16.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the CWA (33 USC 1344), is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. The lateral limits of jurisdiction over non-tidal water bodies extend to the ordinary high water mark (OHWM), in the absence of adjacent wetlands. When adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the USACE with oversight by the U.S. EPA.

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (40 CFR 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE and allow the discharge of dredged or fill material into the aquatic system (waters of the United States) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a "least environmentally damaging practicable alternative" (LEDPA) to the proposed discharge that would have lesser effects on waters of the United States and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, EO 11990 states that a federal agency, such as FHWA and/or the Department, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to the construction and (2) the proposed project includes all practicable measures to minimize harm. A Wetlands Only Practicable Alternative Finding must be made.

At the state level, wetlands and waters are regulated primarily by the SWRCB, the RWQCBs, and the CDFW. In certain circumstances, the California Coastal Commission (or Bay Conservation and Development Commission or the Tahoe Regional Planning Agency) may also be involved. Sections 1600-1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFW jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFW.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by WDRs and may be required even when the discharge is already permitted or exempt under the CWA. In compliance with Section 401 of the CWA, the RWQCBs also issue water quality certifications for activities which may result in a discharge to waters of the United States. This is most frequently required in tandem with a Section 404 permit request. Please see Section 2.9, Water Quality and Stormwater Runoff, for more details.

2.16.2 Affected Environment

Information presented in this section was obtained from the Natural Environment Study (mi) (January 2019), and the Jurisdictional Verification Memo (September 2018; Natural Environment Study [minimal impacts] Appendix D) which included information from the OCTA Programmatic Permit program, as described in the paragraph below.

2.16.2.1 Orange County Transportation Authority Programmatic Permit Program

Similar to the OCTA NCCP/HCP, OCTA has worked with the USACE to define a Programmatic Individual Permit for the 13 M2 freeway projects which establishes Letter of Permission (LOP) procedures. This Permit will streamline the individual project level Section 404 permitting for the M2 freeway projects. This programmatic process allows the USACE to evaluate aquatic resource impacts more holistically, including the adequacy and appropriateness of compensatory mitigation options that could offset unavoidable impacts to the aquatic ecosystem resulting from the individual projects. OCTA seeks to implement mitigation prior to when project impacts would occur; this would minimize temporal losses of aquatic functions and services that often occur between the time aquatic resources are lost at project impact sites and the time when such resources are gained at approved compensatory mitigation sites. LOP authorizations differ from a standard Individual Permit process in that an LOP may be issued without publishing a public notice for each project, and without completing a detailed environmental assessment. The USACE's review, including inter-agency coordination, of each LOP application will ensure adverse impacts are avoided and minimized to the maximum extent practicable, adequate and appropriate compensatory mitigation occurs for unavoidable impacts to the aquatic ecosystem, and each project's proposed activities comply with established LOP permitting procedures. If the USACE determines that a project is ineligible, the applicant would have to seek authorization under a different USACE permitting mechanism or modify the project sufficiently to comply with the established LOP procedures (USACE 2015).

On a parallel process, it is anticipated that the SWRCB will follow the same process being established for the Section 404 permitting. In order for the USACE to issue the 404 Programmatic Permit, the SWRCB must first issue a General 401 Certification. Advanced mitigation is being provided for the General 401 Certification and will be similar to, if not consistent with, the compensatory mitigation credits required for the USACE Permit.

Once the project design is approved and concurrence is received regarding the mitigation statement, LOPs and the project-level 401 Certification would then authorize the discharge of dredged or fill material associated with the specific project designs, include any special conditions, and indicate the amount of mitigation acreage to be deducted from the appropriate site. This step is anticipated to be completed during the design phase of this project. Project-level applications will be processed through the SWRCB. The SWRCB will coordinate with the specific RWQCB as necessary. Applicable OCTA/Caltrans LOP Procedure measures are identified in Appendix D of the Natural Environment Study (minimal impacts) (September 2018) to avoid and minimize impacts to waters.

2.16.2.2 Jurisdictional Delineation

As part of the OCTA Programmatic Permit program, a preliminary jurisdictional delineation was conducted for freeway projects; the proposed project is referred to as "Project F2 or F North" (ICF 2012). Potential waters of the United States and wetlands were delineated using methods established in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual*: Arid *West Region* (USACE 2008), A Field Guide to the Identification of the Ordinary High-Water Mark (OHWM) in the Arid West Region of the Western United States (Lichvar and McColley 2008), and Guidance on Identifying Waters Protected by the Clean Water Act (USACE and U.S. EPA 2011). Non-wetland waters were delineated based on the presence of OHWM indicators, and OHWM data sheets were recorded where appropriate (i.e., for named blueline features [lakes, streams, irrigation ditches, and other hydrographic features as depicted on USGS topographic maps]). At each evaluation area, several parameters were considered to determine if the sample point was within a wetland. Three criteria normally must be fulfilled to classify an area as a jurisdictional USACE wetland: (1) a predominance of hydrophytic vegetation, (2) the presence of hydric soils, and (3) the presence of wetland hydrology.

During project construction, minimization measures (such as standard BMPs) would be implemented for impacts to the six drainages shown above to be consistent with the Special Area Management Plan (SAMP), per the NCCP/HCP. These measures may be considered project features because they are comparable to the Caltrans Standard Specifications and were not developed in response to any specific environmental impact from the proposed project. Dewatering guidelines are described in PF-BIO-1 and stormwater BMPs are covered in PF-BIO-2, as shown in Appendix C: Avoidance, Minimization, and Mitigation Summary. These project features can also be found in Appendix E of the NCCP/HCP, which is included in the *Natural Environment Study* (See Appendix E: List of Technical Studies).

The Study Area included a 0.5-mile buffer from the centerline of the proposed project and was used to examine jurisdictional features mapped by ICF (2012), in order to ensure that site conditions had not changed substantially. A Jurisdictional Verification Memo was prepared to document features that will be impacted to ensure consistency with the preliminary jurisdictional

delineation prepared for the NCCP/HCP. The *Jurisdictional Delineation Verification Memo* is included in Appendix E: List of Technical Studies.

The proposed project is a covered activity under the OCTA/Caltrans Programmatic Permit. Based on data from the Programmatic Permit 2012 jurisdictional delineation, 33 aquatic features were identified and are shown in Figure 2.16-1 (maps 1 through 9). Of the 33 features, only Santiago Creek (F-25/F-25W) contains a natural bottom. Santiago Creek contains wetlands as well as non-wetlands. Santiago Creek is fed by ephemeral drainages that convey water during rain events. No work would be located within or adjacent to Santiago Creek. Nearest project improvements to Santiago Creek are approximately 1.0 mile south near the eastbound SR 22 to northbound SR 55 connector and approximately 3.0 miles north at the Katella Avenue/SR 55 southbound on-ramp. All other features are concrete-lined.



Figure 2.16-1. Aquatic Features (1 of 9)

Orange County Parcels

EA 0K7200 Federal Project Number: 1213000149 Project Limits: 12-ORA-55 PM 10.4 - R17.9



Figure 2.16-1. Aquatic Features (2 of 9)

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Figure 2.16-1. Aquatic Features (3 of 9)



ral Project Nun 1213000149 Project Limits: 12-ORA-55 PM 10.4 - R17.9

Figure 2.16-1. Aquatic Features (4 of 9)

Project F2 Impacted Aquatic Features Orange County Parcels


Figure 2.16-1. Aquatic Features (5 of 9)

Project F2 Aquatic Features Orange County Parcels EA 0K7200 Federal Project Number: 1213000149 Project Limits: 12-ORA-55 PM 10.4 – R17.9



Figure 2.16-1. Aquatic Features (6 of 9)

Project F2 Aquatic Features
Orange County Parcels

EA 0K7200 Federal Project Number: 1213000149 Project Limits: 12-ORA-55 PM 10.4 - R17.9



Figure 2.16-1. Aquatic Features (7 of 9)

SR-55 Improvement Project: I-5 to SR-91 Figure 4: Aquatic Features Map 7 of 9

Project F2 Aquatic Features Orange County Parcels

Fed Project Limits: 12-ORA-55 PM 10.4 - R17.9



Figure 2.16-1. Aquatic Features (8 of 9)

Project F2 Aquatic Features Project F2 Impacted Aquatic Features Orange County Parcels

EA 0K7200 Federal Project Number: 1213000149 Project Limits: 12-ORA-55 PM 10.4 – R17.9 Figure 4: Aquatic Features Map 8 of 9



Figure 2.16-1. Aquatic Features (9 of 9)

Project F2 Aquatic Features Project F2 Impacted Aquatic Features Orange County Parcels

For Project Limits: A-55 PM 10.4 - R17.9 12-0

2.16.3 Environmental Consequences

2.16.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

Six concrete-lined drainages/channels (F-1, F-13, F-29, F-30, F-31, and F-32) would be temporarily impacted by the proposed project by relocating/re-establishing the channels (Figure 2.16-1 [maps 1 through 9]) to continue to serve the same purpose they currently serve, which is to convey stormwater.

Direct impacts to jurisdictional areas will require permits/authorizations from the USACE pursuant to Section 404 of the CWA, CDFW pursuant to Section 1602 of the California Fish and Game Code, and the RWQCB pursuant to Section 401 of the CWA. Permits would be obtained in accordance with the NCCP/HCP permitting and mitigation strategies for the OCTA M2 Freeway Program Projects. Temporary impacts are provided in Table 2.16-1.

Drainage Feature	Drainage Type	CDFW Impact (acres/linear feet)	USACE Impact (acres/linear feet)
F-1	concrete-lined	0.03/549	0.03/549
F-13	concrete-lined	0.01/462	0.01/462
F-29	concrete-lined	0.03/286	0.01/282
F-30	concrete-lined	0.03/250	0.01/246
F-31	concrete-lined	0.04/266	0.01/262
F-32	concrete-lined	0.05/414	0.02/410
Total	N/A	0.19/2,227	0.09/2,211

Table 2.16-1: Temporary Drainage Impacts

No Build Alternative

The No Build Alternative would not result in the construction or improvements within the project area and, therefore, would not result in direct or indirect temporary impacts on natural communities.

2.16.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

All six features that would be impacted by the proposed Build Alternative are concrete-lined drainages that would be relocated, realigned, or boxed. These drainages would continue to convey existing flows and would not result in any direct permanent impacts to waters of the United States or waters of the State. Indirect or secondary impacts are not anticipated to occur.

No Build Alternative

The No Build Alternative would not result in the construction or improvements within the project area and, therefore, would not result in direct permanent impacts on natural communities. No indirect or secondary impacts on these resources would result from implementation of the No Build Alternative.

2.16.4 Avoidance, Minimization, and/or Mitigation Measures

OCTA began coordinating with the USACE in October 2010 to discuss the approach and process to obtain authorization to construct 13 freeway projects, which includes the proposed project, as well as receive approval for advanced permittee-responsible mitigation for the rehabilitation, enhancement, and preservation activities proposed at Aliso Creek, Agua Chinon, and Ferber Ranch. As a result of this early coordination, USACE and OCTA decided that a Programmatic Individual Permit would be sought for the overall program which establishes LOP procedures. The LOP procedures would streamline the approval of each individual project and provide approval of the compensatory mitigation types and locations provided at Aliso Creek, Agua Chinon, and Ferber Ranch to offset unavoidable impacts to waters of the United States. If the proposed project is found to be consistent with the SAMP by the USACE, an LOP will be issued to authorize the discharge of dredged and/or fill materials into waters of the United States. If the proposed project is found to be inconsistent with the SAMP, an Individual Permit will be required.

No compensatory mitigation is proposed for temporary impacts to the six drainages shown above. The concrete-lined drainages will be relocated/re-established to serve the same purpose as existing conditions, which is to convey stormwater. Because the proposed project is covered under the NCCP/HCP, it will follow the guidelines stated in Appendix E of the NCCP/HCP.

In addition, concrete-lined features, which are previously impacted and mitigated or are manmade features constructed to convey downstream flows consisting mostly of urban and storm runoff, will not require compensatory mitigation contingent upon continued conveyance of baseline flows downstream.

The newly designed highway will continue to convey flows downstream through the relocation/re-establishment of the six concrete-lined channels; and, therefore, no compensatory mitigation is proposed.

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2.17 Plant Species

2.17.1 Regulatory Setting

The USFWS and CDFW have regulatory responsibility for the protection of special status plant species. "Special status" species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are provided varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Section 2.19, Threatened and Endangered Species, of this document contains detailed information about these species.

This section of the document discusses all other special status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 USC Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at California Fish and Game Code, Section 1900-1913, and CEQA, found at California PRC, Sections 21000-21177.

2.17.2 Affected Environment

Information presented in this section was obtained from the *Natural Environment Study* (minimal impacts) (January 2019) and the *Rare Plant and Vegetation Assessment*, dated June 2018 and included as Appendix C to the *Natural Environment Study* (minimal impacts).

Prior to conducting field surveys, a list of special status plants known to occur in the vicinity of the proposed project was developed. This list of potentially occurring special status species was created using the following sources:

- The USFWS official species list for the proposed project (USFWS 2018; See Section 4.2.6)
- CDFW California Natural Diversity Database (CNDDB) record search for the Tustin, California, and Orange, California, 7.5-minute quadrangles (CNDDB 2018). CNDDB special status species occurrences within a 0.5-mile radius of the proposed project are shown in Figure 2.17-1.
- CNDDB Occurrences of Special Status Species
- CNPS Inventory of Rare and Endangered Plants record search of the Tustin, California and Orange, California 7.5-minute USGS topographic quadrangles (Table 2.17-1)
- NCCP/HCP review of covered activities and plan implementation (ICF 2016)





In addition, since the proposed project is a covered activity under the NCCP/HCP, the three covered plant species identified in the plan and shown in Table 2.17-2 were assessed for potential to occur.

Scientific Name/	Common Name	CNPS Designation	Federal Listing	Occurrence/Habitat
Centromadia parryi australis	southern tarplant	1B.1	none	Not expected/poor habitat
Helianthus nuttallii parishi	Los Angeles sunflower	1A	none	None/ No habitat
Lasthenia glabrata coulteri	Coulter's goldfields	1B.1	none	None/ No habitat
Pentachaeta aurea allenii	Allens pentachaeta	1B.1	none	None/ No habitat
Senecio aphanactis	chaparral ragwort	2B.2	none	None/ No habitat
Symphyotrichum defoliatum	San Bernardino aster	1B.2	none	Not expected/poor habitat
Lepidium virginicum robinsonii	Robinson's peppergrass	4.3	none	None/ No habitat
Atriplex coulteri	Coulters saltbush	1B.2	none	None/ No habitat
Atriplex pacifica	south coast saltscale	1B.2	none	None/ No habitat
Atriplex serenana davidsonii	Davidson's saltscale	1B.2	none	None/ No habitat
Suaeda esteroa	estuary seablite	1B.2	none	None/ No habitat
Suaeda taxifolia	woolly seablite	4.2	none	None/ No habitat
Convovulus simulans	small flowered morning- glory	4.2	none	Not expected/poor habitat
Dudleya multicaulis	many-stemmed dudleya	1B.2	none	None/ No habitat
Juncus acutus leopoldii	southwestern spiny rush	4.2	none	Not expected/poor habitat
Nama stenocarpa	mud nama	2B.2	none	None/ No habitat
Sidalcea neomexicana	salt spring checkerbloom	2B.2	none	Not expected/poor habitat
Hordeum intercedens	vernal barley	3.2	none	None/ No habitat
Camissoniopsis lewisii	Lewis's evening primrose	3	none	None/ No habitat
Calochortus catalinae	Catalina mariposa lily	4.2	none	Not expected/poor habitat

Table 2.17-1: California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants

Table 2.17-2: NCCP/HCP Covered Plant Species

Common Name	Scientific Name	CNPS Status	General Habitat Description	Habitat Present/ Absent	Rationale
intermediate mariposa lily	Verbesina dissita	1B.1	chaparral, valley grassland, coastal sage scrub	A	The Study Area does not contain chaparral, valley grassland, or coastal sage scrub habitat.
many-stemmed dudleya	Dudleya multicaulis	1B.2	coastal plain in heavy clay soils	А	The Study Area does not contain coastal plain habitat
southern tarplant	Centromadia parryi ssp. australis	1B.1	Wetlands	А	The Study Area does not contain wetland habitat.

Notes: Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is, or may be present. The species may be present. Present [P] - the species is present. Federal Species of Concern (FSC); USFWS Birds of Conservation Concern (BCC); State Endangered (SE); State Threatened (ST); Fully Protected (FP); State Rare (SR); State Species of Special Concern (SSC); California Native Plant Society (CNPS)

Rare plant field surveys were conducted in May 2017 at the Chapman Avenue and SR 55 freeway bridges along Santiago Creek and in July 2017 at intersections along the entire SR 55 right-of-way between I-5 and SR 91 freeways. All plants observed were documented. Unknown species were keyed out using *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012). Full coverage plant surveys were conducted on at least one of the four corners of each intersection. Informal visual surveys from across the street were conducted at the other corners. A master plant list of all species observed within the Study Area is shown in Table 2.15-1.

A total of 105 plant species were observed during plant surveys within the Study Area. This included 44 ornamentals, 42 non-native weeds, and 19 native species. The Study Area does not contain suitable habitat for any special status plant species.

Of 105 plant species, 65 species of plants were found growing within the banks of Santiago Creek; however, many of the species are escaped ornamentals (19 species) or non-native weeds (31 species).

2.17.3 Environmental Consequences

2.17.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

No special status plant species were identified within the project Study Area. No direct or indirect temporary impacts would occur to any special status plant species, including the three covered plant species as identified in the NCCP/HCP (Table 2.17-2).

No Build Alternative

The No Build Alternative would not result in the construction or improvements within the project area and, therefore, would not result in direct or indirect temporary impacts on plant species.

2.17.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

No special status plant species were identified within the project Study Area. No direct permanent impacts would occur to any special status plant species, including the three covered plant species as identified in the NCCP/HCP (Table 2.17-2). Indirect or secondary impacts are not anticipated to occur.

No Build Alternative

The No Build Alternative would not result in the construction or improvements within the project area and, therefore, would not result in permanent impacts on plant species. No indirect or secondary impacts on plant species would result from implementation of the No Build Alternative.

2.17.4 Avoidance, Minimization, and/or Mitigation Measures

No impacts to special status plants will occur. No mitigation measures are required.

2.18 Animal Species

2.18.1 Regulatory Setting

Many State and federal laws regulate impacts to wildlife. The USFWS, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service), and the CDFW are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the FESA or CESA. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.19, Threatened and Endangered Species. All other special status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries Service candidate species.

Federal laws and regulations relevant to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following:

- California Environmental Quality Act
- Sections 1600 1603 of the California Fish and Game Code
- Sections 4150 and 4152 of the California Fish and Game Code

2.18.2 Affected Environment

Information presented in this section was obtained from the *Natural Environment Study* (mi) (January 2019) and the *Bat Habitat Assessment* (May 2018).

2.18.2.1 Common Wildlife

Native wildlife is expected to be minimal within the proposed project site due to the lack of native plant communities, the degree of disturbance, and the minimal habitat value. In some portions of the Study Area, such as along Santiago Creek, native riparian bird species may be present. However, most wildlife species that may occur are expected to be those species that typically adapt to human-altered landscapes and urban/residential environments. Examples of this would include western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinata*), mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), black phoebe (*Sayornis nigricans*), American crow (*Corvus brachyrhynchos*), western scrub-jay (*Aphelocoma california*), northern mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), California ground squirrel (*Otospermophilus beecheyi*), Audubon's cottontail (*Sylvilagus audubonii*), and coyote (*Canis latrans*).

2.18.2.2 Habitat Connectivity

The opportunity for wildlife movement within the proposed project area is minimal. Santiago Creek may provide for wildlife movement of common animal species associated with the proposed project area such as coyotes, raccoons, ground squirrels, and other small mammals. The nearest project improvements to Santiago Creek are approximately 1.0 mile south near the eastbound SR 22 to northbound SR 55 connector and approximately 3.0 miles north at the Katella Avenue/SR 55 southbound on-ramp.

2.18.2.3 Regional Species and Habitats of Concern

<u>Bats</u>

Potential foraging and tree-roosting habitat for bats is scattered throughout the proposed project area, primarily in the form of non-native trees (such as eucalyptus and palm trees) and insects associated with patches of ornamental vegetation and concrete-lined drainages. Santiago Creek provides the only native, although substantially degraded, riparian vegetation.

A focused bat survey was therefore conducted by Jacobs Engineering biologists Bruce Palmer and David Charlton (May 2018). Site visits were conducted to inspect 26 specific roadwayrelated structural features within the proposed project area that may potentially provide suitable day or night roosting locations for bats. Daytime inspections of these bridge and drainage structures within the proposed project area were conducted on July 13, 2017. The sides and undersides of each bridge and culvert were thoroughly searched with the aid of a spotlight and binoculars. Crevices, expansion joints, weep holes, cavities, and other recessed areas (e.g., girder and wall unions) were searched for the presence of roosting bats and for bat sign such as guano deposits and staining of walls and crevices from bat urine and body secretions indicating current or past use of an area by roosting bats. Each structure was also evaluated as a potential roost site based on the physical features of the structure (e.g., depth of crevices) and its proximity to suitable foraging habitat (e.g., vegetated areas) and water sites. Figure 2.18-1 shows the structure locations within the project area.

A small amount of bat sign was detected at two structures: Santiago Creek Bridge over SR 55 and the abandoned railroad overhead, suggesting transitory use of these sites as a night roost. Staining and two guano pellets were observed stuck to the side of a crevice on the underside of Santiago Bridge, and staining was located on the underside of the abandoned railroad overhead. It is possible that a few bats may occasionally night-roost in or on other surveyed structures, but no evidence was found of day-roosting bats in these structures. There was no accumulation of guano pellets or extensive staining as evidence of persistent day- or night-roosting, nor were any bats observed day-roosting at these structures. Though surveys were conducted past the peak of the maternity period, if a maternity colony had been present, guano and staining would have been evident.

Based on the closed bridge underside, lack of open crevices, the high levels of traffic passing under most bridges, and lack of observed bat sign (e.g., guano and staining), potential day roost opportunities for bats within the SR 55 project area are limited to two bridges (Santiago Creek and the abandoned railroad overhead) and one culvert (Highland Drainage Channel).



Figure 2.18-1. Project Structure Locations

SR-55 Improvement Project: I-5 to SR-91 Figure 5: Project Structure Locations

> JACOBS 7/5/2018

Potential night roosting sites may occur at four additional sites (Lincoln Avenue undercrossing, Taft Avenue undercrossing, Chapman Avenue undercrossing, and westbound SR 22 separation). Surrounding bat foraging habitat is considered relatively low quality. Additionally, there is a low probability that bats consistently utilize these structures for roosting.

NCCP/HCP Covered Species

Since the proposed project is a covered activity under the NCCP/HCP, the 10 covered animal species identified in the NCCP/HCP and shown in Table 2.18-1 were assessed for potential to occur within the Study Area.

Common Name	Scientific Name	Status	General Habitat Description Habitat Prese Abse		Rationale
bobcat	Lynx rufus	N/A	Woodlands, desert, shrublands, urban	HP	Habitat may be present within Santiago Creek
mountain lion	Puma concolor	SPM	Deserts, coast forests, arid hillsides, scrub and oak woodland	A	No suitable habitat exists within the Study Area
cactus wren	Campylorhynchus brunneicapillus	BCC/ SSC	Deserts; arid foothills that have cactus, mesquite, yucca and other types of desert scrub	Deserts; arid foothills that have cactus, mesquite, yucca and A other types of desert scrub	
coastal California gnatcatcher	Polioptila californica californica	FT/ SSC	Coastal sage scrub, California sagebrush	A	The Study Area contains sparse, disturbed areas of California sagebrush but does not provide habitat for this species.
least Bell's vireo	Vireo bellii pusillus	FE/SE	Riparian forest	ΗP	Although marginal habitat exists in Santiago Creek, no construction activities would take place in or adjacent to the creek, and no impacts would occur to this species.
southwestern willow flycatcher	Empidonax traillii extimus	FE/SE	Riparian forest	ΗΡ	Although marginal habitat exists in Santiago Creek, no construction activities would take place in or adjacent to the creek, and no impacts would occur to this species.
arroyo chub	Gila orcutti	SSC	low gradient pools and flat-water habitats with gravel and sand substrate that support at least some aquatic/ emergent vegetation	A	The project does not contain low-gradient pools or flatwater habitats.

Table 2.18-1: NCCP/HCP Covered Animal Species

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale
coast horned lizard	Phrynosoma blainvillii	SSC	Valley-foothill hardwood, conifer and riparian habitats, as well as in pine-cypress, juniper and annual grassland habitats.	A	The project does not contain suitable habitat for the coast horned lizard.
orange- throated whiptail	Aspidoscelis hyperythra	WL	low-elevation coastal scrub, chamise- redshank chaparral, mixed chaparral, and valley-foothill hardwood habitats.	A	The project does not contain suitable habitat for the orange-throated whiptail.
western pond turtle	Emys marmorata	SSC	marshes, streams, rivers, ponds, and lakes	A	No western pond turtles have been documented in the portion of Santiago Creek that lies within the Study Area.

Notes: Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is, or may be present. The species may be present. Present [P] - the species is present. Critical Habitat [CH] - project footprint is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present. Status: Federal Endangered (FE); Federal Threatened (FT); Federal Proposed (FP, FPE, FPT); Federal Candidate (FC), Federal Species of Concern (FSC); USFWS Birds of Conservation Concern (BCC); State Endangered (SE); State Threatened (ST); Fully Protected (FP); State Rare (SR); State Species of Special Concern (SSC); California Native Plant Society (CNPS)

Potential habitat exists for bobcat, least Bell's vireo, and southwestern willow flycatcher within the Study Area. Although marginal habitat exists for these three species, the proposed project is a covered activity under the NCCP/HCP as an OCTA M2 project. Therefore, the proposed project has already been analyzed, and protocol level surveys are not required.

Migratory Birds

Although no migratory birds were observed during surveys, the proposed project area does provide habitat for foraging and nesting migratory birds.

2.18.3 Environmental Consequences

2.18.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

Common Wildlife

No temporary or permanent impacts to common wildlife are expected to occur as a direct result of the proposed project. Common wildlife currently using the Study Area are adapted to highly urbanized areas. The proposed project would not change the surrounding urbanization or use of the area by common wildlife.

Habitat Connectivity

Santiago Creek crosses the proposed project site and may function as a wildlife corridor for common animals such as coyotes, bobcats, raccoons, rabbits, opossums, and mice. The nearest project improvements to Santiago Creek are approximately 1 mile south near the eastbound

SR 22 to northbound SR 55 connector and approximately 3 miles north at the Katella Avenue/SR 55 southbound on-ramp. No construction activities would take place within or adjacent to the creek, and the project would have no direct permanent or temporary impacts to habitat connectivity.

Regional Species and Habitats of Concern Bats

Since potential day roost opportunities for bats within the SR 55 project area are limited to two bridges (Santiago Creek and the abandoned railroad overhead) and one culvert (Highland Drainage Channel), temporary direct and indirect impacts from noise and vibration may occur to roosting bats and maternity colonies of roosting bats during bridge or culvert widening and/or replacement activities. Bats frightened from a day roost and bat maternity colonies, which consist of female bats and flightless young, are particularly vulnerable to these types of impacts.

At the four potential night roosting sites (Lincoln Avenue undercrossing, Taft Avenue undercrossing, Chapman Avenue undercrossing, and westbound SR 22 separation), surrounding bat foraging habitat is considered relatively low quality; and, therefore, there is a low probability that bats consistently utilize these structures for roosting. However, the loss of night roost sites could impact bat energetics, even though bats often change night roost sites. Temporary construction activities would only occur adjacent to the Lincoln Avenue undercrossing associated with relocation of the southbound Lincoln Avenue off-ramp. Foliage-roosting bats may also be subject to direct or indirect temporary impacts during clearing and grubbing associated with project activities.

NCCP/HCP Covered Species

Low quality riparian habitat is present within Santiago Creek for three NCCP/HCP covered species: bobcat, least Bell's vireo, and southwestern willow flycatcher as shown in Table 2.18-1 above. However, no temporary or permanent direct or indirect impacts would occur to habitat within Santiago Creek. The nearest project improvements to Santiago Creek are approximately 1 mile south near the eastbound SR 22 to northbound SR 55 connector, and approximately 3 miles north at the Katella Avenue/SR 55 southbound on-ramp. No construction will take place within or adjacent to the section of SR 55 that crosses Santiago Creek. The project would have no impacts to any of the 13 covered species.

Migratory Birds

The proposed project provides little to no suitable habitat for nesting and foraging migratory birds. However, bird species adapted to freeway noise could nest within or adjacent to the proposed project impact area. Temporary direct impacts to these bird species may include increased noise, dust, lighting from construction activities, and clearing and grubbing to accommodate project features. Indirect or secondary impacts are not anticipated to occur.

No Build Alternative

The No Build Alternative would not result in construction or improvements within the project area and, therefore, would not result in temporary or permanent impacts on animal species.

2.18.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

The proposed project Study Area does not contain habitat for any of the covered animal species identified in the NCCP/HCP except for Santiago Creek, which will not be impacted by construction activities. Indirect or secondary impacts on these species are not anticipated to occur. Therefore, the project will not permanently impact State and/or federally listed wildlife species or species covered under the NCCP/HCP.

No Build Alternative

The No Build Alternative would not result in the construction or improvements within the project area and, therefore, would not result in permanent impacts on animal species. No indirect or secondary impacts on animal species would result from the No Build Alternative.

2.18.4 Avoidance, Minimization, and/or Mitigation Measures

BIO-1 BATS Complete preconstruction bat habitat assessment will be conducted to reevaluate the protection status for bat species potentially within the project area. Preconstruction habitat assessment will include the following:

A bat roost habitat reassessment and acoustic and emergence bat surveys should be completed throughout the Study Area within one year ahead of project implementation.

At project structures that may provide night roost habitat (Lincoln Avenue undercrossing, Taft Avenue undercrossing, Chapman Avenue undercrossing, and westbound SR 22 separation), determine which species may be present and their approximate number through acoustic monitoring and exit counts.

Verify if maternity colonies are present.

Ascertain which species are using project structures for night roosting.

Determine if special conservation measures may apply based on current regulatory practices, including exclusion measures, if necessary.

Coordinate with CDFW on the pre-construction habitat assessment and surveys to check with the species occupancy and conservation status at the time of project construction. Coordination should include, but not be limited to, (a) the timing of the surveys, (b) reporting of the assessment and survey results, and (c) development of appropriate avoidance and minimization measures.

NCCP/HCP Covered Species

Though no impacts would occur to NCCP/HCP covered animal species, avoidance and minimization measures are proposed in case native or nesting bird species are found prior to construction.

BIO-2 MIGRATORY BIRDS To minimize impacts to potential nesting birds, the proposed Minimization Measure will implement the NCCP/HCP Nesting Bird Policy as follows:

Proposed project activities (including, but not limited to, staging and disturbances to native and non-native vegetation, structures, and substrates) should occur outside the avian breeding season, which generally runs from January 15 to September 15 (as early as January 1 for some birds) to avoid disturbance to breeding birds or destruction of the nest or eggs. Depending on the avian species present, a qualified biologist may determine that a change in the breeding season dates is warranted.

If the Construction Lead determines that avoidance of the avian breeding season is not feasible, at least two weeks prior to the initiation of project activities, a qualified biologist with experience in conducting breeding bird surveys will conduct weekly bird surveys to detect presence/absence of native bird species occurring in suitable nesting habitat that is to be directly or indirectly disturbed and (as access to adjacent areas allows) any other such habitat within an appropriate buffer distance of the disturbance area. Generally, the buffer distance should be 300 feet (500 feet for raptors); however, because the covered freeway improvement projects will generally occur along noisy freeways, a buffer distance as low as 100 feet for non-raptors could be appropriate. If a narrow buffer distance is warranted, the Construction Lead will have a qualified biologist identify the appropriate buffer distances for raptors and non-raptors and notify the Wildlife Agencies. The surveys should continue on a weekly basis, with the last survey being conducted no more than three days prior to the initiation of project activities. If a native or nesting bird species is found, the Construction Lead will do one of the following to avoid and minimize direct impacts on native birds and the nest or eggs of any birds:

- Implement default 300-foot minimum avoidance buffers for all birds and 500foot minimum avoidance buffers for all raptor species. The breeding habitat/nest site will be fenced and/or flagged in all directions, and this area will not be disturbed until the nest becomes inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, and the young will no longer be impacted by the project.
- If a narrower buffer distance is determined appropriate by the qualified biologist, the Construction Lead will develop a project-specific Nesting Bird Management Plan. The site-specific nest protection plan will be developed collaboratively with Wildlife Agencies and submitted to the Wildlife Agencies, although the Wildlife Agencies will not be responsible for approving the narrower buffer distance and the Nesting Bird Management Plan. The Plan should include detailed methodologies and definitions to enable a qualified avian biologist to monitor and implement nest-specific buffers based on topography, vegetation, species, and individual bird behavior. This Nesting Bird Management Plan will be supported by a Nest Log that tracks each nest and its outcome. The Nest Log will be submitted to the Wildlife Agencies at the end of each week.

- The Construction Lead may propose an alternative plan for avoidance and nesting birds for Wildlife Agencies' review and approval.
- Flagging, stakes, and/or construction fencing should be used to demarcate the inside boundary of the buffer between the project activities and the nest. The Construction Lead personnel, including all contractors working on site, should be instructed on the sensitivity of the area. The Construction Lead will document the results of the recommended protective measures described above to demonstrate compliance with applicable State and federal laws pertaining to the protection of native birds.
- The biological monitor will be present on site during all grubbing and clearing of vegetation to ensure that these activities remain within the project footprint (i.e., outside the demarcated buffer) and that the flagging/stakes/fencing is being maintained, and to minimize the likelihood that active nests are abandoned or fail due to project activities. The biological monitor will send weekly monitoring reports to the OCTA NCCP Administrator during the grubbing and clearing of vegetation and will notify the OCTA NCCP Administrator immediately if project activities take, possess, or needlessly destroy the nest or eggs of any bird as well as birds-of-prey and their nest or eggs. Within 48 hours of damage to an active nest or eggs or observed death or injury of birds protected under State law or the Migratory Bird Treaty Act (MBTA) (which includes, but not is limited to, the birds on the Covered Species list), OCTA will notify the Wildlife Agencies.

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2.19 Threatened and Endangered Species

2.19.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the FESA: 16 USC Section 1531, et seq. See also 50 CFR Part 402. This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the FHWA (and the Department, as assigned), are required to consult with the USFWS and the NOAA Fisheries Service to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion with an Incidental Take statement or a Letter of Concurrence. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the CESA, California Fish and Game Code Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The CDFW is the agency responsible for implementing CESA. Section 2080 of the California Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. "Take" is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFW. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of FESA, the CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (1) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (2) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

2.19.2 Affected Environment

Information presented in this section was obtained from the *Natural Environment Study* (mi) (January 2019).

An updated USFWS official species list was obtained on February 13, 2020, and is provided in Section 4.2.6. The USFWS species list included 10 species that may occur within the proposed project Study Area as shown in Table 2.19-1. The proposed project Study Area contains suitable

habitat within Santiago Creek for the least Bell's vireo and southwestern willow flycatcher, both of which are federally and State listed as endangered species. However, no construction activities would occur within or adjacent to the creek. These species are NCCP/HCP Covered Species. Therefore, no protocol surveys are required.

A NOAA/NMFS species list was obtained for the project on September 5, 2019 (See Section). The list Identified no critical habitat and one species within the project area located within the Orange (Quad Number 33117-G7) and Tustin Quads (Quad Number33117-F7). The Steelhead Trout (Oncorhynchus mykiss) was identified in the Orange and Tustin Quads. This species is considered Endangered under the Endangered Species Act. In 1947, a Steelhead fingerling was identified in Santiago Creek, a tributary to the Santa Ana River that runs along a channelized course that ultimately drains into the Santa Ana River in the City of Santa Ana. No construction activities would occur within or adjacent to Santiago Creek, and it is highly likely that Steelhead have been extirpated from the SAR and Santiago Creek. There are no records of Steelhead within the project since 1947.

No other listed species or critical habitat is present within the Study Area due to the high degree of surrounding urbanization. Based on these findings, the project has no effect on all the species listed in Table 2.19-1.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale	Effect Determination
Pacific pocket mouse	Perognathus longimembris pacificus	FE	Sandy, coastal soils, coastal sage scrub, coastal dune, river alluvium	A	No sandy coastal soils, dunes, or alluvium are present within the Study Area.	No Effect
California least tern	Sterna antillarum browni	FE/SE	Open beaches, bays, estuaries, lagoons	A	The Study Area does not contain open beach, bay, estuarine, or lagoon habitat.	No Effect
coastal California gnatcatcher	Polioptila californica californica	FT	Coastal sage scrub, California sagebrush	A	The Study Area contains sparse, disturbed areas of California sagebrush, but does not provide habitat for this species.	No Effect
least Bell's vireo	Vireo bellii pusillus	FE/SE	Riparian forest	HP	Although marginal habitat exists in Santiago Creek, no construction activities would take place in or adjacent to the creek, and no impacts would occur to this species.	No Effect
light-footed clapper rail	Rallus longirostris levipes	FE/SE	Coastal salt marsh	A	No coastal salt marsh habitat occurs within the Study Area.	No Effect

 Table 2.19-1: Threatened and/or Endangered Species and Critical Habitat Potentially

 Occurring or Known to Occur in the Project Area and Effect Determinations

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale	Effect Determination
southwestern willow flycatcher	Empidonax traillii extimus	FE/SE	Riparian forest	ΗP	Although marginal habitat exists in Santiago Creek, no construction activities would take place in or adjacent to the creek, and no impacts would occur to this species.	No Effect
western snowy plover	Charadrius alexandrinus nivosus	FT	Open beaches, bays, estuaries, lagoons	A	The Study Area does not contain open beach, bay, estuarine, or lagoon habitat.	No Effect
Santa Ana sucker	Catostomus santaanae	FT	Santa Ana River	A	The project does not impact the Santa Ana River.	No Effect
big-leaved crownbeard	Verbesina dissita	FT/ST	Southern maritime chaparral near Laguna Beach	A	The Study Area does not contain southern maritime chaparral habitat and is located 14 miles away from Laguna Beach.	No Effect
Laguna Beach liveforever	Dudleya stolonifera	FT/ST	Sandstone surfaces near Laguna Beach	A	The Study Area does not contain sandstone habitat and is located 14 miles away from Laguna Beach.	No Effect
Steelhead trout	Oncorhynchu s mykiss	FE	Santiago Creek	A	The project does not impact the Santiago Creek.	No effect

Notes: Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is, or may be present. The species may be present. Present [P] - the species is present. Critical Habitat [CH] - project footprint is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present. Status: Federal Endangered (FE); Federal Threatened (FT); Federal Proposed (FP, FPE, FPT); Federal Candidate (FC), Federal Species of Concern (FSC); State Endangered (SE); State Threatened (ST); Fully Protected (FP); State Rare (SR); State Species of Special Concern (SSC); California Native Plant Society (CNPS)

2.19.3 Environmental Consequences

2.19.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

Although the proposed project Study Area encompasses Santiago Creek, which contains suitable riparian habitat for the least Bell's vireo and southwestern willow flycatcher, project improvements are approximately 1 mile south of Santiago Creek near the eastbound SR 22 to northbound SR 55 connector and approximately 3 miles north at the Katella Avenue/SR 55 southbound on-ramp. Therefore, no temporary direct or indirect impacts would occur to the least Bell's vireo or southwestern willow flycatcher individuals or their habitat. The construction activities are far enough away from Santiago Creek that they will not create additional noise that may disrupt nesting behavior. As a result, no Section 7 consultation is required, and a no effect determination is made for both species.

No Build Alternative

The No Build Alternative would not result in the construction or improvements within the project area and, therefore, would not result in temporary direct impacts on animal species.

2.19.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

Although the proposed project Study Area encompasses Santiago Creek, which contains suitable riparian habitat for the least Bell's vireo and southwestern willow flycatcher, project improvements are approximately 1 mile south of Santiago Creek near the eastbound SR 22 to northbound SR 55 connector and approximately 3 miles north at the Katella Avenue/SR 55 southbound on-ramp. Therefore, no permanent direct or indirect impacts would occur to the least Bell's vireo or southwestern willow flycatcher individuals or their habitat.

No Build Alternative

The No Build Alternative would not result in the construction or improvements within the project area and, therefore, would not result in permanent impacts on animal species. No indirect or secondary impacts on animal species would result from implementation of the No Build Alternative.

2.19.4 Avoidance, Minimization, and/or Mitigation Measures

No temporary or permanent impacts would occur to listed species. No mitigation measures are required.

2.20 Invasive Species

2.20.1 Regulatory Setting

On February 3, 1999, President William J. Clinton signed EO 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." FHWA guidance issued August 10, 1999, directs the use of the State's invasive species list, maintained by the California Invasive Species Council to define the invasive species that must be considered as part of the NEPA analysis for a proposed project.

2.20.2 Affected Environment

Information presented in this section was obtained from the *Natural Environment Study* (mi) (January 2019).

During rare plant surveys described above, 21 invasive plant species were documented within the Study Area, as shown in Table 2.20-1.

Scientific Name	Common Name	Cal-IPC Rating
Arundo donax	giant reed	High
Avena barbata	slender oat	Moderate
Avena fatua	wild oats	Moderate
Bromus diandrus	ripgut brome	Moderate
Carpobrotus edulis	highway iceplant	High
Centaurea melitensis	tocalote	Moderate
Eucalyptus camaldulensis	red gum	Limited
Ficus carica	edible fig	Moderate
Foeniculum vulgare	fennel	Moderate
Hedera canariensis	Algerian ivy	High
Hirschfeldia incana	short-pod mustard	Moderate
Lobularia maritima	sweet alyssum	Limited
Marrubium vulgare	horehound	Limited
Nicotiana glauca	tree tobacco	Moderate
Olea europaea	olive	Limited
Pennisetum setaceum	crimson fountain grass	Moderate
Plantago lanceolata	English plantain	Limited
Polypogon monspeliensis	rabbitsfoot grass	Limited
Ricinus communis	castor bean	Limited
Salsola tragus	Russian thistle	Limited
Schinus molle	Peruvian pepper tree	Limited

Table 2.20-1: Invasive Plant Species Within Study Area

Notes: Cal-IPC: California Invasive Plants Council.

No invasive animal species were documented within the Study Area.

2.20.3 Environmental Consequences

2.20.3.1 Temporary Impacts

Build Alternative (Preferred Alternative)

Potential impacts from invasive species associated with the construction and operation of the project are considered permanent. See Section 2.20.3.2 Permanent Impacts for discussion regarding invasive species.

No Build Alternative

The No Build Alternative would not include construction of any of the proposed project improvements. As a result, as described under permanent impacts, the No Build Alternative would not result in new impacts related to invasive species. Locations within the SR 55 right-of-way where invasive species currently occur would not be modified under the No Build Alternative.

2.20.3.2 Permanent Impacts

Build Alternative (Preferred Alternative)

The introduction of invasive species into previously undisturbed areas constitute as permanent direct and indirect impacts to any affected native habitats. The proposed project has the potential to spread invasive species to adjacent native habitats in the Biological Study Area through the entering and exiting of contaminated construction equipment, the inclusion of invasive species in seed mixtures and mulch, and the improper removal and disposal of invasive species, which may cause seed to be spread along the highway.

In compliance with EO 133112, to minimize direct impacts associated with invasive plant species, various measures have been incorporated into the Proposed Project, including avoiding the use of invasive plant material during and after construction, a weed abatement program, and litter control, as identified in Section 2.20.4.

No Build Alternative

The No Build Alternative would not result in the construction or improvements within the project area and, therefore, would not result in spread of invasive species within the project area. No indirect or secondary impacts on these species would result from implementation of the No Build Alternative.

2.20.4 Avoidance, Minimization, and/or Mitigation Measures

BIO-3 INVASIVE SPECIES To minimize impacts associated with the potential to spread invasive plant species, the following project features have been incorporated into the proposed project, including avoiding the use of invasive plant material during

and after construction, a weed abatement program, and litter control, as stated below:

Weed Abatement Program. In compliance with Executive Order 13112, and guidance from the Federal Highway Administration (FHWA), the landscaping and erosion control plans included in the project will not use species listed as invasive. A weed abatement program shall be developed for the proposed project and incorporated into the Plans, Specifications, and Estimates (PS&E) package to avoid and/or minimize the importation of non-native plant material during and after construction. At a minimum, the program shall include the following measures:

- During construction, invasive plant material will be removed from the proposed project work area. All removed invasive plant material will be disposed of properly in a landfill or other suitable facility.
- During construction, the Construction Contractor shall inspect and clean construction equipment at the beginning of each day and prior to transporting equipment from one project location to another.
- During construction, soil and vegetation disturbance will be minimized to the greatest extent feasible.
- During construction, the Construction Contractor shall ensure that all active portions of the construction site are watered a minimum of twice daily, or more often when needed due to dry or windy conditions, to prevent excessive amounts of dust.
- During construction, the Construction Contractor shall ensure that all material stockpiled is sufficiently watered or covered to prevent excessive amounts of dust. During construction, soil, gravel, and rock will be obtained from weed-free sources.
- Only certified weed-free straw, mulch, and/or fiber rolls will be used for erosion control.
- After construction, affected areas adjacent to native vegetation will be revegetated with plant species that are native to the vicinity as approved by the District Biologist.
- After construction, all revegetated areas will avoid the use of species listed on the California Invasive Plant Council (Cal-IPC) California Invasive Plant Inventory that have a High or Moderate rating.
- Erosion control and/or revegetation sites will be monitored after construction to detect and control the introduction/invasion of non-native species. The monitoring period will be determined in consultation with resource agencies.
- Eradication procedures (e.g., spraying and/or hand weeding) will be outlined should an infestation occur; the use of herbicides will be prohibited within and adjacent to native vegetation, except as specifically authorized and monitored by the District Biologist.

• All woody invasive species will be removed from the proposed project limits.

Best Management Practices During Construction. All equipment maintenance, staging, and dispensing of fuel, oil, or any other such activities will occur in developed or designated nonsensitive upland habitat areas. The designated upland areas will be located in such a manner as to prevent any spill runoff from entering waters of the United States.

Trash Control. To avoid attracting predators of Covered Species and other sensitive species, the proposed project site will be kept as clean of debris as possible. All food-related trash items will be enclosed in sealed containers and regularly removed from the site(s).

Invasive Species Control. Invasive species will be removed from the project work area and controlled during construction. The use of known invasive plant species (i.e., plant species listed in Cal-IPC's California Invasive Plant Inventory with a High or Moderate rating) will be prohibited for construction, revegetation, and landscaping activities. Project measures will be included to ensure invasive plant material is not spread from the project site to other areas by disposal off site or by tracking seed on equipment, clothing, and shoes. Equipment/material imported from an area of invasive plants must be identified and measures implemented to prevent importation and spreading of non-native plant material within the project site. All construction equipment will be cleaned with water to remove dirt, seeds, vegetative material, or other debris that could contain or hold seeds of noxious weeds before arriving to and leaving the project site. Eradication strategies (i.e., weed abatement programs) will be employed should an invasion occur during construction.

2.21 Energy

2.21.1 Regulatory Setting

NEPA (42 USC Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

The CEQA Guidelines section 15126.2(b) and Appendix F, Energy Conservation, require an analysis of a project's energy use to determine if the project may result in significant environmental effects due to wasteful, inefficient, or unnecessary use of energy or wasteful use of energy resources.

2.21.2 Affected Environment

2.21.2.1 State

California contains abundant sources of nonrenewable and renewable energy. Nonrenewable resources include large crude oil and natural gas deposits that are located within six geological basins in the Central Valley and along the coast. Much of these reserves are concentrated in the southern San Joaquin Basin. Regarding renewable resources, the state leads the nation in net electricity generation from solar, geothermal, and biomass. California has considerable solar potential, especially in the southeastern deserts; and several of the world's largest solar thermal plants are located in California's Mojave Desert. Although California's wind power potential is widespread, especially along the eastern and southern mountain ranges, much of the state is excluded from development of this resource because it is in wilderness areas, parks, or urban areas.

The transportation sector is responsible for the most energy consumption of any sector within the state. More motor vehicles are registered in California than in any other state, and commute times in California rank among some of the longest in the country.

2.21.2.2 Regional

The U.S. Census Bureau estimates that the Orange County population was approximately 3.2 million in 2017. The existing population is heavily dependent on automobile travel due to the suburban development throughout most of the County. The majority of energy consumed in the County is from transportation fuels. The annual VMT in Orange County is 27,364,374,953, according to the California ARB EMFAC model. It is anticipated that the population will continue to be dependent on automobile travel in future years, although the OCTA plans to increase transit options in the region. For example, the OC Streetcar is anticipated to begin operations in 2021.

2.21.2.3 Local

Within the project limits, SR 55 currently has three to five general purpose lanes and a HOV lane in each direction, with auxiliary lanes between ramps at various locations. Based on information obtained from the Orange County Transportation Analysis Model (Version 4.0), the existing/baseline annual VMT is 716,385,439 with 94 percent non-trucks and 6 percent trucks.

This results in an annual fuel consumption of approximately 21,113,570 gallons per year of gasoline and 2,339,648 gallons per year of diesel fuel. Existing traffic management systems include metered ramps and changeable message boards. No new highway lighting is proposed for the project. Currently, lighting exists at near interchanges and on- and off-ramps. The existing pavement surface is considered to be in good condition, which contributes to energy efficiencies.

2.21.3 Environmental Consequences

Transportation energy is generally described in terms of direct and indirect energy. In the context of transportation, direct energy involves all energy consumed by vehicle propulsion (e.g., automobiles, trains, and airplanes). This energy consumption is a function of traffic characteristics such as VMT, speed, vehicle mix, and thermal value of the consumed fuel. Some projects may also include features such as new or replacement roadway lighting or other features requiring electricity which is an ongoing and permanent source of direct energy consumption. The one-time energy expenditure involved in constructing a project is also considered direct energy. Indirect energy includes maintenance activities which would result in long-term indirect energy consumption by equipment required to operate and maintain the roadway.

The following analysis includes the direct energy use during construction and long-term use of the facility, as well as indirect energy usage in terms of ongoing maintenance. This analysis is subject to the rule of reason and focuses on energy use that is caused by the project—a full "lifecycle" analysis that would account for energy used in building materials and consumer products is not required for the project.

2.21.3.1 Energy Use

Direct Energy (Mobile Sources)

The objective of the project is to reduce traffic congestion, improve mobility, and improve traffic operations in the study area. The project alternatives propose to accomplish this objective through operational improvements and/or capacity enhancement (i.e., general purpose lane) on the SR 55 study corridor. Congestion relief and capacity-increasing projects affect the capability of a roadway facility to address existing and future traffic demand. This results in changes to direct energy consumption (i.e., fuel usage) from vehicles using the facility. Another important consideration is that for operation of a project over the long term, newer and more fuel-efficient vehicles will enter the fleet, resulting in an overall lower potential for an increase in energy consumption due to vehicle traffic. This relationship is illustrated in Figure 2.21-1.



Figure 2.21-1. Fuel Economy by Speed (Based on Studies from 1973, 1984, 1997, 2012, and Autonomies Modeling)

Source: Oak Ridge National Laboratory 2016

Direct energy use in terms of diesel fuel and gasoline consumption from mobile sources was estimated using CT-EMFAC. CT-EMFAC is an emission model developed by the California Department of Transportation (Caltrans) that calculates project-level emissions and fuel consumption using data from the ARB EMFAC model. Table 2.21-1 shows that under the Existing/Baseline condition in 2017, annual VMT within the project area is approximately 716,385,439 and annual fuel consumption includes 2,339,648 gallons of diesel fuel and 21,113,570 gallons of gasoline. With substantial improvements in engine fuel efficiency anticipated, fuel consumption per vehicle mile will decrease in the future. In 2035, implementation of the project would marginally decrease regional gasoline and diesel consumption because of improved traffic operations. By 2055, implementation of the project would increase annual gasoline and diesel fuel consumption by less than 1 percent relative to the No Build condition.

Analysis Year	Annual VMT	Vehicle Percentages (non-truck/truck)	Annual Fuel Consumption (gallons) Diesel	Annual Fuel Consumption (gallons) Gasoline
Existing/Baseline (2017)	716,385,439	94.0/6.0	2,339,648	21,113,570
Opening (2035) No Build	766,074,394	94.0/6.0	2,228,825	13,552,055
Opening (2035) Alt. 1	764,926,731	94.0/6.0	2,207,993	13,419,458
Design (2055) No Build	835,905,372	94.0/6.0	2,394,240	13,898,371
Design (2055) Alt. 1	841,700,065	94.0/6.0	2,398,483	13,974,103

Table 2.21-1: Annual VMT, Vehicle Percentages, and Operational Fuel Consumption

Direct Energy (Electricity)

The majority of electricity used for the project would be associated with lighting. In the existing condition, SR 55 is lit where required to promote safe driving practices. The project does not include new light fixtures and the replacement or reduction of existing fixtures. New lighting associated with this section of SR 55 is anticipated to be included under a separate project as part of the median improvements along SR 55. Operation of the Build Alternative (Preferred Alternative) would maintain freeway lighting consistent with pre-construction conditions.

Direct Energy (Construction)

Construction energy effects involve the one-time, non-recoverable energy costs associated with construction of roadways and structures. Site preparation and roadway construction typically involves clearing, cut-and-fill activities, grading, removing or improving existing roadways, building bridges, and paving roadway surfaces. Construction-related effects on energy from most highway projects would be greatest during the site preparation and concrete paving phases because the excavation, handling, and transport of materials requires equipment and truck fuels.

The Section 2.13, Air Quality, includes a quantification of construction-related carbon dioxide equivalent (CO₂e) emissions using the Road Construction Emissions Model. These emissions were used to estimate construction energy from CO₂e emission factors derived for the ARB greenhouse gas (GHG) emissions inventory. For gasoline fuel, approximately 25.4 pounds of CO₂e are generated per gallon combusted, and for diesel fuel approximately 29.8 pounds of CO₂e are generated per gallon combusted. The fuel consumption was estimated from the equipment and vehicles that would be employed in construction activities. Diesel engines are installed in heavy-duty off-road construction equipment and on-road haul trucks. Gasoline engines are typically found in passenger vehicles that would be used for construction worker daily commutes. Table 2.21-2 presents the direct, one-time expenditure of fuel consumption associated with construction activities. Construction would require approximately 310,629 gallons of diesel and 37,432 gallons of gasoline.

Construction Phase	Duration (Months)	Fuel Consumption (gallons) Diesel	Fuel Consumption (gallons) Gasoline
Grubbing/Land Clearing	3.6	17,307	2,348
Grading/Excavation	14.4	170,314	17,756
Drainage/Utilities/Sub-Grade	12.6	95,159	13,047
Paving	5.4	27,849	4,281
Total	36.0	310,629	37,432

Table 2.21-2: Construction Fuel Consumption

Indirect Energy (Maintenance)

Maintenance comprises energy for the day-to-day upkeep of equipment and systems, as well as the energy embedded in any replacement equipment, materials, and supplies. The energy needed to maintain the project improvements would not be measurably greater than the energy used to maintain the existing SR 55 roadway within the project limits. For example, project operations would not require Caltrans to purchase additional maintenance vehicles.

Consistency with Energy Conservation Plans

The project would be consistent with regional and State energy conservation plans. Planning documents with relevant energy assessments include the 2016 RTP/SCS Draft Environmental Impact Report (EIR) published by the SCAG (2015b) and the 2018 Integrated Energy Policy Report (IERP) published by the California Energy Commission (CEC 2018). The 2016 RTP/SCS includes a comprehensive assessment of regional energy consumption primarily focused on residential and commercial electricity, natural gas, and water use. The 2016 RTP Draft EIR (SCAG 2015b) includes a brief analysis of transportation fuel consumption. SCAG concluded in the Draft EIR that the 2016 RTP/SCS would have a less than significant impact on increasing petroleum and non-renewable fuel usage because fuel consumption is expected to result in a 26.7 percent net reduction in the SCAG region from the 9.3 billion gallons consumed in 2012 to the projected 6.8 billion gallons consumed in 2040. As shown above in Table 2.21-1, transportation fuel use would be less in the project opening and design years than existing/baseline condition. Furthermore, transportation fuel use in 2035 would be less with the project than without the project. A slight increase in fuel use would occur in 2055 due to increased VMT, although the additional transportation fuel use would represent a less than 1 percent increase in fuel use from the No Build Alternative. The project would be consistent with the energy findings in the 2016 RTP/SCS and would not interfere with implementation of the 2016 RTP/SCS.

The 2018 IERP (CEC 2018) includes key goals to guide the State's energy policy, including reducing petroleum use in cars and trucks by up to 50 percent. The discussion related to this goal broadly focuses on increasing the number of zero- or near-zero emission vehicles operating on the roadway network. It is also noteworthy that improving driving conditions reduces petroleum use. The *Traffic Operations Report* (July 2018) concludes that AM and PM peak period vehicle delays would decrease by 19 percent and 6percent, respectively, in 2035. The AM and PM peak period vehicle delays would decrease by 14 percent and 4 percent, respectively, in 2055. The congestion improvement would reduce vehicle idling and associated fuel consumption. This

would be consistent with the goal of reducing petroleum use in cars and trucks by up to 50 percent and the project would not interfere with implementation of the 2018 IERP.

Energy Findings

Regarding long-term and permanent energy consumption, operational activities would primarily require energy for transportation fuel, electricity for lighting, and maintenance activities. The consumption of transportation fuel would be the dominant energy use. As indicated above, implementation of the project would marginally decrease regional fuel consumption in 2035 and would increase regional mobile source fuel consumption by less than 1 percent in 2055. The project does not include a substantial number of new light fixtures, and the replacement of existing fixtures would incorporate the use of energy-efficient lighting. The project would not significantly increase regional energy consumption, and the project would not interfere with the implementation of energy conservation plans. Therefore, the project would not result in an inefficient, wasteful, and unnecessary consumption of energy.

Regarding short-term and temporary energy consumption, construction activities would primarily consume diesel and gasoline through operation of heavy-duty construction equipment, material deliveries, and debris hauling. As indicated above, energy use associated with proposed project construction is estimated to result in the short-term consumption of 310,629 gallons from diesel-powered equipment and 37,432 gallons from gasoline-powered equipment. This represents a small demand on local and regional fuel supplies that would be easily accommodated, and this demand would cease once construction is complete. Moreover, construction-related energy consumption would be temporary and no permanent new source of energy demand would result from project construction activities. While construction would result in a short-term increase in energy use, construction-related fuel use would have no noticeable effect on peak or baseline demands for energy, and construction design features would help conserve energy. For example, recycled materials will be used where feasible. Recycled products typically have lower manufacturing and transport energy costs since they do not utilize raw materials, which must be mined and transported to a processing facility. Therefore, construction activities would not result in an inefficient, wasteful, and unnecessary consumption of energy.

2.21.4 Avoidance, Minimization, and/or Mitigation Measures

The project will incorporate the project features in Section3.2, Climate Change to help avoid and/or minimize potential impacts. No additional avoidance, minimization, and/or mitigation measures other than the project features identified in Section 3.2 are required.
2.22 Cumulative Impacts

2.22.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the proposed project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development as well as from agricultural development and the conversion to more intensive agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

The CEQA Guidelines Section 15130 describes when a cumulative impact analysis is necessary and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under NEPA can be found in 40 CFR Section 1508.7.

2.22.2 Methodology

The cumulative impact analysis methodology utilized was based on the eight-step process set forth in the Caltrans Standard Environmental Reference (SER) Guidance for Preparers of Cumulative Impact Analysis (Caltrans 2005). The eight-step process is as follows:

- Identify resources to be analyzed
- Define the Study Area for each resource (i.e., Resource Study Area [RSA])
- Describe the current health and historical context for each resource
- Identify direct and indirect impacts of the proposed project
- Identify other reasonably foreseeable actions that affect each resource
- Assess potential cumulative impacts
- Report results
- Assess the need for mitigation

2.22.2.1 Resources Excluded from Cumulative Impact Analysis

As specified in the Caltrans SER guidance, if the proposed project would not result in a direct or indirect impact to a resource, it would not contribute to a cumulative impact on that resource and need not be evaluated with respect to potential cumulative impacts. Those resources for which

cumulative effects are not anticipated or for which the impacts were already analyzed in a cumulative context (e.g., traffic, air quality, and noise) are briefly discussed below.

- **Coastal Zone:** The project limits are not located within the Coastal Zone. The proposed project has no potential to contribute to cumulative adverse impacts to the Coastal Zone.
- Wild and Scenic Rivers: No wild and scenic rivers are in the Study Area. The proposed project has no potential to contribute to cumulative adverse impacts to wild and scenic rivers.
- Land Use: The freeway improvements associated with the Build Alternative (Preferred Alternative) are consistent with local and regional goals to improve traffic operations and reduce congestion in the area. The Build Alternative would improve areas that are currently designated or used for transportation. The proposed project would not require any conversion of other land uses to transportation, and the proposed project would not contribute to cumulative adverse land use impacts.
- **Parks and Recreation:** The proposed project would not result in any acquisition of park or recreational land. The Build Alternative would not result in any use of publicly owned public parks or wildlife or waterfowl refuges pursuant to Section 4(f). The proposed project would not contribute to cumulative adverse impacts related to parks and recreation.
- **Growth:** The Build Alternative would improve existing and future traffic operations, reduce congestion, and accommodate existing and future planned growth that would occur with or without the project. The Build Alternative does not induce growth or remove obstacles to growth in the area and, therefore, would not contribute to cumulative adverse impacts related to growth.
- **Community:** The proposed project would be constructed primarily within Caltrans rightof-way, except for the two TCEs discussed in detail in Section 2.3.2.3. As discussed parking would be maintained; however temporary relocation of personal items would be required. Additionally, typical construction related delays area also anticipated. The project would implement a TMP to minimize construction-related impacts on the community. During operation of the proposed Build Alternative, the project would result in in reduced congestion and decreased travel times. The Build Alternative would not contribute to cumulatively adverse impacts on the community.
- Utilities and Emergency Services: It is not anticipated that temporary impacts to emergency services would contribute to a cumulative effect within the Study Area. Additionally, the proposed project would not permanently adversely affect utilities or emergency services and, therefore, would not contribute to cumulative adverse effects to utility facilities and emergency service providers.
- **Traffic/Transportation**: The analysis of future traffic conditions in Section 2.5, Traffic and Transportation/Pedestrian and Bicycle Facilities, for 2035 (Opening Year) and 2055 (Design Year) is a cumulative analysis in that it considers traffic generated by existing and future planned land uses and the effect of future planned transportation improvements. As a result of the cumulative analysis presented in Section 2.5, the Build Alternative would improve traffic operations and reduce congestion. Therefore, the Build Alternative would not contribute to cumulative adverse impacts to traffic/transportation.

- **Visual/Aesthetics:** The Build Alternative would not substantially change the existing views of and from SR 55 and impacts to visual quality would be low. Therefore, the Build Alternative would not contribute to cumulative adverse effects to visual resources.
- **Cultural Resources:** Construction of the Build Alternative would not impact known cultural resources or cultural resources on or eligible for listing on the NRHP. While cultural resources in the Study Area outside the project limits may be directly or indirectly impacted by other projects, the proposed project would not directly or indirectly impact those resources and, therefore, would not contribute to cumulative adverse impacts related to cultural resources.
- **Hydrology and Floodplains:** Modifications to floodplain crossings from the Build Alternative would not result any change to the base flood elevation, and no encroachments to any hydrologic channels are anticipated. Therefore, the proposed project would not contribute to cumulative adverse effects related to hydrology and floodplains.
- Water Quality: As described in Section 2.9, Water Quality and Stormwater Runoff, drainages that could be impacted by the Build Alternative would drain into the Santa Ana River Watershed. However, those drainages would experience only temporary construction-related impacts that would be reduced by the implementation of Project Features PF-WQ-1 and PF-WQ-2. Although an increase in new and replaced impervious surfaces would occur under the Build Alternative, the new impervious surface area would be treated, providing greater overall water quality benefits to receiving waters. The Build Alternative would comply with the requirements of the Construction General Permit, the Caltrans SWMP, and the Caltrans and City NPDES permit requirements and would include BMPs to target pollutants of concern in stormwater runoff during construction and operations. Considering the urbanized nature of the project area, the Build Alternative would not contribute to cumulative adverse impacts to surface water quality.
- **Geology/Soils/Seismic/Topography:** The potential impacts of the Build Alternative related to geologic conditions and soils as discussed in Section 2.10, Geology/Soils/Seismic/Topography, would be avoided or minimized based on site-specific geotechnical design features, as described in Project Feature PF-GEO-1. As a result, the Build Alternative would not contribute to cumulative adverse impacts related to geology, soils, seismicity, and topography.
- Hazardous Waste/Materials: Three properties are located in the vicinity of the maximum disturbance limits of the Build Alternative and were identified as potential RECs; however, no improvements or excavation is anticipated on or adjacent to these three sites. Temporary impacts related to hazardous materials/wastes during project construction could occur within the maximum disturbance limits for the Build Alternative. None of the properties proposed for use as TCEs were identified as having a hazardous waste concern. No additional permanent easements or permanent property acquisitions would be required. All staging would occur within Caltrans' right-of-way, and no permanent property acquisition would be required. The Build Alternative would not result in adverse impacts associated with the TCE during construction. Construction may disturb contaminated soil, hazardous material pipelines, ADL, yellow striping or other paint potentially containing chromium and or lead, ACM, and contaminated

groundwater. Project Features PF-HAZ-1 through PF-HAZ-6 would avoid impacts and would not contribute to cumulative adverse Hazardous Waste/Material impacts.

- Air Quality: It is anticipated that construction will last for approximately 24 months. Project Features PF-AQ-1 through PF-AQ-12, identified in Section 2.13, minimize construction-related emissions; and emissions would not contribute to cumulative adverse impacts during construction. During operation, the Build Alternative would result in very small increases or decreases in the regional emissions and would not contribute substantially to regional vehicle emissions. As described in Section 2.13, the proposed project was determined not to be a POAQC by the TCWG.
- Noise: PF-N-1 would minimize temporary noise impacts, and the project would not contribute to a cumulative adverse effect during construction within the project area. Changes in operational noise range from -1.1 to 2.0 dBA as described in Section 2.14; the increases in predicted traffic noise levels to modeled receptors would be barely perceptible; therefore, the proposed project would not contribute to cumulative adverse effects related to noise.
- Natural Communities: Although Santiago Creek crosses SR 55 within the Study Area and contains riparian vegetation, the nearest improvements to Santiago Creek are approximately 1 mile south near the eastbound SR 22 to the northbound SR 55 connector and approximately 3 miles north at the Katella Avenue/SR 55 southbound on-ramp. No habitats or natural communities of special concern would be directly or indirectly impacted by the proposed project. Santiago Creek may provide for wildlife movement of common animal species such as coyotes, raccoons, ground squirrels, and other small mammals. No construction would occur within or adjacent to Santiago Creek, and no direct or indirect impacts to wildlife movement are anticipated. During operation, no new impacts to wildlife crossings or natural communities would occur. The Build Alternative would not contribute to cumulative adverse effects related to natural communities.
- Animal Species: A bat habitat assessment was conducted in 2018 (May 2018). Temporary direct and indirect impacts from noise and vibration may occur to roosting bats and maternity colonies of roosting bats during bridge or culvert widening and/or replacement activities. Four potential night roosting sites (Lincoln Avenue undercrossing, Taft Avenue undercrossing, Chapman Avenue undercrossing, and westbound SR 22 separation) surrounding bat foraging habitat is considered relatively low quality; and, therefore, a low probability exists that bats consistently utilize these structures for roosting. However, the loss of night roost sites could impact bat energetics, even though bats often change night roost sites. Temporary construction activities would only occur adjacent to the Lincoln Avenue undercrossing associated with relocation of the southbound Lincoln Avenue off-ramp. Foliage-roosting bats may also be subject to direct temporary impacts during clearing and grubbing associated with project activities. Additionally, if vegetation is cleared during the nesting season (February 1 – September 30), impacts to migratory birds could occur. If ground-disturbing activities cannot be avoided during this nesting season, a qualified Biologist with experience in conducting breeding bird surveys will conduct weekly bird surveys, beginning at least two weeks prior to the initiation of project activities. These surveys will detect presence/absence of native bird species occurring in suitable nesting habitat that is to be directly or indirectly disturbed and any other such habitat within an appropriate buffer distance of the disturbance area. The project would implement Mitigation Measures

BIO-1 to avoid, minimize, and/or mitigate impacts to bats and BIO-2 to avoid impacts to migratory birds. The Build Alternative would not contribute to cumulative adverse effects related to animal species.

- Wetlands and Other Waters: The Build Alternative would not have an impact on wetlands, and natural streambeds would not be converted. The potential CDFW jurisdictional area that would be impacted by the Build Alternative is concrete-lined. Therefore, the proposed project would not contribute to cumulative adverse effects related to wetlands and other waters.
- **Plant Species:** No special status plant species were identified within the project Study Area (Table 2.17-1). No temporary or permanent impacts would occur to any special status plant species, including the three covered plant species as identified in the NCCP/HCP (Table 2.17-2). The Build Alternative would not contribute to cumulative adverse effects related to special status plant species.
- **Invasive Species:** The Build Alternative would not substantially increase the potential for the spread of invasive species. With implementation of measure BIO-3 in Section 2.20, Invasive Species, the proposed project would not contribute to cumulative adverse effects related to invasive species.

2.22.3 Resources Evaluated for Cumulative Impacts

The following discussion of potential cumulative impacts is presented by environmental resource area. The reasonably foreseeable projects considered in this analysis are presented in Table 2.22-1. The proposed project, which would be primarily constructed within State right-of-way and two private properties (TCEs for construction; see Section 2.3.2.3 for detailed discussion of TCEs) considers other Caltrans projects within or adjacent to the SR 55 corridor. Except for the Lincoln Avenue Park and Ride, currently under construction, the listed project would improve existing facilities rather than construct new facilities. All of the projects listed in Table 2.22-1, except for Meats Avenue interchange, would be constructed prior to the Build Alternative. Meats Avenue interchange would be constructed sometime after 2035. The following resources are evaluated to determine if the Build Alternative would result in cumulatively considerable impacts: Paleontological Resources.

Project Number	Description	Milestone Dates
EA 0Q350K	Lincoln Ave/Santiago Boulevard Lane Reconfiguration	Design: July 2018 to October 2019 Construction: February 2020 to February 2022
EA 0R150	Upgrade lighting at Chapman Avenue	Design: June 2022 to September 2023
EA 0R320	Multi-Asset Project	Design: Feb 2025 to September 2026
EA0R670	Add safety lighting and median barrier	Design: Jan 2022 to July 2023
EA 078100	Meats Ave Interchange Project	This project is currently not expected to be completed by the opening date (2035) but is included in the Traffic Operations Report for the Design Year (2055)
EA 0J3400	SR 55 (I-405 to I-5)	PA & ED – December 2018 Design – July 2022 Construction – February 2026
EA 0K9800	SR 91 (SR-57 to SR-55)	PA & ED – Present until Summer 2019 Design – Summer 2022 to Summer 2025 Construction – Summer 2026 to Winter 2030
EA 0Q4804	Lincoln Avenue Park-and-Ride	Under Construction

 Table 2.22-1: Cumulative Project List — Caltrans Projects on or Adjacent to SR-55

Notes: ED: Environmental Document; PA: Programmatic Agreement

2.22.4 Avoidance, Minimization, and/or Mitigation Measures

Paleontological Resources

The RSA includes the project right-of-way where excavation would occur within undisturbed soils. The literature reviewed included published and unpublished scientific papers. A paleontological record search was conducted at the LACM (November 14, 2017), and no localities were identified within the project area. However, several fossil localities are adjacent to the project area that have been recorded from the same sedimentary deposits that occur within the project area at the surface and at depth. Additional record searches of online databases were completed. Localities LACM 1067, 1729, 2019, 3408, 3802, 3977, 3978, 3980, and 3986, which are located southwest of the project area east of Upper Newport Bay, collectively produced ghost shark (Chimaera, Chimaeroidei), thresher shark (Alopias superciliosus), giant white shark (Carcharocles), white shark (Carcharodon carcharias, Carcharodon sulcidens), bonito shark (Isurus oxyrinchus), spiny dogfish (Squalus acanthias), hake (Merluccius productus), codling (Moridae), queenfish (Seriphus), sculpins (Cottidae), rockfish (Sebastes), auklet (Mancalla californiensis), turkey (Meleagris), shearwater (Puffinus felthami), sea lion (Otariidae). Locality LACM 1652 is located northwest of the project area and northwest of the Santa Ana River and produced fossil sheep (Ovis). Locality LACM 4943 is located northwest of the project area and east of the Santa Ana River and produced fossil horse (Equus). Locality LACM 7867 is located southeast of the project area in Orange County Park and produced fossil pocket gopher (Thomomys) (October 2018).

Excavations (including drilling) into areas containing native Miocene, Pliocene, and Pleistocene sediments may result in significant impacts to paleontological resources. Surface grading or shallow excavations that are entirely within Quaternary young alluvial fan, wash, and landslide

deposits and artificial fill in the project area are unlikely to impact significant fossil vertebrate remains. However, older deposits are likely present at depth beneath Quaternary young sedimentary deposits and previously disturbed or artificial fill.

Due to the flat terrain of the central and southern project areas and limited exposures of subsurface native sediments on the entire project area, the depth of native Miocene, Pliocene, and Pleistocene sediments beneath the ground surface could not be determined during the field survey. Only one exposure of in situ Pliocene Fernando Formation was observed during the survey. Depending on the depth and location of earthmoving activities, project construction has the potential to result in significant adverse direct impacts to paleontological resources within the project area. There is potential for impacts both at the surface and at depth in areas of native high sensitivity deposits and at depth in areas of low sensitivity surface deposits. If other projects listed in Table 2.22-1 also require excavation within fossiliferous formations within the project right-of-way, the project has potential to result in cumulatively considerable impacts to paleontological resources; however, the Build Alternative includes Mitigation Measures PALEO-1 and PALEO⁻² to mitigate potential adverse impacts on paleontological resources. Other projects listed in Table 2.22-1 would also require similar measures and thus, when considered with the Build Alternative, would not result in cumulatively considerable adverse impacts on paleontological resources.

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Chapter 3 California Environmental Quality Act Evaluation

The proposed project is a joint project by the California Department of Transportation (Department, Caltrans) and the FHWA and is subject to State and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the CEQA and the NEPA. FHWA's responsibility for environmental review, consultation, and any other actions required by applicable federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC Section 327 and the NEPA Assignment MOU dated December 23, 2016, and executed by FHWA and Caltrans. The Department is the lead agency under CEQA and NEPA.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an Environmental Impact Statement (EIS) or a lower level of documentation will be required. NEPA requires that an EIS be prepared when the proposed federal action (project) *as a whole* has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require the Department to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list a number of "mandatory findings of significance" which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this project and CEQA significance.

3.1 CEQA Environmental Checklist

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects will indicate that there are no impacts to a particular resource. A NO IMPACT answer in the last column reflects this determination. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

Project features, which can include both design elements of the project, and standardized measures that are applied to all or most Caltrans projects such as BMPs and measures included in the Standard Plans and Specifications or as Standard Special Provisions, are considered to be an integral part of the project and have been considered prior to any significance determinations documented below; Chapters 1 and 2 contain a detailed discussion of these features. The

annotations to this checklist are summaries of information contained in Chapter 2 in order to provide the reader with the rationale for significance determinations; for a more detailed discussion of the nature and extent of impacts, please see Chapter 2. This checklist incorporates by reference the information contained in Chapters 1 and 2.

3.1.1 Aesthetics

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?				\boxtimes
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 a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?				
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				

CEQA Significance Determinations for Aesthetics

Determination is based on Section 2.6, Visual/Aesthetics, of this IS/EA and the Visual Impact Assessment completed for the project (October 2018).

a) No Impact

The proposed project would not have a substantial adverse impact on a scenic vista because the project area does not include any scenic vistas.

b) No Impact

SR 55 is not a designated scenic highway. The nearest Scenic Highway is the portion of SR 91 extending for 4 miles east from the SR 55/SR 91 interchange.

c) Less Than Significant Impact

The proposed Build Alternative would result in compatible visual characteristics to the existing project corridor. The proposed elements are continuous of the existing infrastructure and do not encroach or obstruct any existing views or elements. The visual quality and character will be harmonious and consistent with the existing visual quality. The project would not change existing land use patterns along SR 55 because SR 55 is an existing transportation facility in a highly developed area.

d) No Impact

The proposed project would not include new lighting elements in an area in which there is currently no lighting.

3.1.2 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 the forest carbon measurement methodology provided in Forest Protocols adopted by the California ARB.

Would the project:	Significant and Unavoidable Impact	Less Than Significant 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?				\boxtimes
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?				\boxtimes
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?				

CEQA Significance Determinations for Agriculture and Forest Resources

Determinations made based on available information from the California Department of Conservation (2018b) for Farmlands and the project location for forest resources.

a) No Impact

The California Department of Conservation has mapped the project area as Urban and Built up (California Department of Conservation 2018b).

b) No Impact

No parcels under a Williamson Act contract are within the project limits.

c, d) No Impact

No forest or timberlands are within the project limits.

e) No Impact

No other changes are anticipated to farmland or forest land.

3.1.3 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:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?				\boxtimes
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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?				
c) Expose sensitive receptors to substantial pollutant concentrations?			\boxtimes	
d) Create objectionable odors affecting a substantial number of people?			\boxtimes	

CEQA Significance Determinations for Air Quality

Determinations are based on Section 2.13, Air Quality, of this IS/EA and the Air Quality Technical Study for the project (November 2018, updated 2019).

a) No Impact

The project is listed in the 2016–2040 financially constrained RTP/SCS, which was found by the SCAG to conform on April 7, 2016; and FHWA and FTA made a regional conformity determination finding on June 2, 2016. The project is also included in SCAG financially constrained 2019 FTIP, page 2 of the Orange County Project Listing for State Highways. The 2019 FTIP (SCAG 2018) was determined to conform by FHWA and the FTA on December 17, 2018. The design concept and scope of the project is consistent with the project description in the 2016–2040 RTP/SCS, 2019 FTIP, and the "open to traffic assumptions of the SCAG regional emissions analysis. There is no potential for a significant impact.

b) Less Than Significant Impact

California is divided geographically into 15 air basins for the purpose of managing the air resources of the State at a regional level. Each air basin generally has similar meteorological and geographic conditions throughout. Each local district is responsible for preparing the portion of the State Implementation Plan (SIP) applicable within its boundaries.

The South Coast Air Basin (Basin) is the appropriate study area for evaluation of cumulative impacts for air quality. The Basin is currently designated as in nonattainment of the federal and State ambient air quality standards for ozone (O₃), respirable particulate matter less than 10 microns in diameter (PM_{10}), and fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). Therefore, an ongoing cumulative impact is associated with these air pollutants. The potential for the project to contribute to a permanent cumulative impact is assessed through consistency with air quality plans.

Per CEQA Guidelines Section 15130 (d), where a project is included in an approved regional plan (among other land use plans) that adequately addresses the effected resource area, no additional analysis is required. Because the project is listed in the region's currently conforming the 2016-2040 RTP/SCS, associated project emissions would not be cumulatively considerable.

c) Less Than Significant Impact

In complying with U.S. EPA Transportation Conformity requirements, the project underwent Interagency Consultation to determine the likelihood for pollutant hot-spots and localized exposure. As discussed in Sections 2.13.1.1 and 4.2.5, Interagency Consultation participants concurred on May 22, 2018, that the project is not a POAQC for particulate matter. Participants in making the determination included U.S. EPA, FHWA, FTA, Caltrans, California ARB, and SCAQMD. The air quality analysis for the project also demonstrates that the project would not result in a localized CO hot-spot.

Also, as presented in Section 2.13, a detailed mobile source air toxics analysis was completed for the project. The latest version of CT-EMFAC (Caltrans's <u>em</u>ission <u>fac</u>tors) was used to estimate daily emissions of benzene, 1,3-butadiene, formaldehyde, acrolein, naphthalene, diesel particulate matter, and Polycyclic Organic Matter. Emissions of all MSAT compounds under the Build Alternative would be less than the Existing/Baseline Condition in 2035 and 2055. Impacts would be less than significant.

d) Less Than Significant Impact

Some phases of construction, particularly asphalt paving, would result in short-term odors in the immediate area of each paving site. Such odors would be quickly dispersed below detectable thresholds as distance from the site increases. Construction emissions would be temporary and limited to the immediate area surrounding the construction site and would not have a significant effect on sensitive receptors. Caltrans standard specifications require documentation of odors and corrective actions taken. Regarding operational activities, the project would not generate a substantial source of odors. The land uses and industrial operations commonly associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills,

dairies, and fiberglass molding. It is not anticipated that odors generated by vehicles would be perceptible beyond the Caltrans right-of-way. Impacts would be less than significant.

3.1.4 Biological Resources

Would the project:	Significant and Unavoidable Impact	Less Than Significant 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 Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries?				
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?				
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				
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?				

CEQA Significance Determinations for Biological Resources

Determinations are based on Section 2.15, Natural Communities; 2.16, Wetlands and Other Waters; 2.17, Plant Species; 2.18, Animal Species; 2.19, Threatened and Endangered Species; 2.20, Invasive Species; and the NES (mi) for the project (January 2019).

a) Less Than Significant with Mitigation Incorporated

Potential foraging and tree-roosting habitat for bats is scattered throughout the proposed project area, primarily in the form of non-native trees (such as eucalyptus and palm trees) and insects associated with patches of ornamental vegetation and concrete-lined drainages. Santiago Creek provides the only native, although substantially degraded, riparian vegetation. Construction of the proposed project would result in removal of vegetation. If bats are located in the vegetation, removal could result in construction-related mortality and would be considered a significant impact.

Potential day and night roosting habitat was also identified within the biological survey area (BSA). Potential day roosts within the BSA for SR 55 are limited to two bridges (Santiago Creek and the abandoned railroad overhead) and one culvert (Highland Drainage Channel). Potential night roosting sites may occur at four additional sites (Lincoln Avenue undercrossing, Taft Avenue undercrossing, Chapman Avenue undercrossing, and westbound SR 22 separation). Currently, no construction activities are anticipated near Taft Avenue or Chapman Avenue undercrossings. A new Lincoln Avenue southbound off-ramp structure would be constructed adjacent to the Lincoln Avenue undercrossing. An additional northbound and southbound general purpose lane would be constructed in the vicinity of the westbound SR 22 separation. Construction to or near culverts and bridges could result in significant impacts to bats.

Additionally, the project is not scheduled to go to construction until 2032. The existing condition could change substantially between approval of this IS/EA and start of construction that would result in impacts to bats that could be significant.

The following Mitigation Measure is proposed:

BIO-1 BATS Complete preconstruction bat habitat assessment will be conducted to reevaluate the protection status for bat species potentially within the project area. Preconstruction habitat assessment will include the following:

A bat roost habitat reassessment and acoustic and emergence bat surveys should be completed throughout the Study Area within one year ahead of project implementation.

At project structures that may provide night roost habitat (Lincoln Avenue undercrossing, Taft Avenue undercrossing, Chapman Avenue undercrossing, and westbound SR 22 separation), determine which species may be present and their approximate number through acoustic monitoring and exit counts.

Verify if maternity colonies are present.

Ascertain which species are using project structures for night roosting.

Determine if special conservation measures may apply based on current regulatory practices, including exclusion measures, if necessary.

Implementation of BIO-1 would mitigate potential significant impacts to bats to less than significant.

b) No Impact

No habitats or natural communities of special concern would be directly or indirectly impacted by the proposed project.

c) Less Than Significant Impact

Six jurisdictional features would be temporarily impacted by the proposed Build Alternative. These features are all concrete-lined and would be relocated, realigned, or boxed. These drainages would continue to convey existing flows and would not result in any permanent impacts to waters of the United States or waters of the State.

d) Less than Significant Impact

The opportunity for wildlife movement within the proposed project area is minimal. Santiago Creek may provide for wildlife movement of common animal species associated with the proposed project area such as coyotes, raccoons, ground squirrels, and other small mammals. The nearest project improvements to Santiago Creek are approximately 1.0 mile south near the eastbound SR 22 to northbound SR 55 connector and approximately 3.0 miles north at the Katella Avenue/SR 55 southbound on-ramp. The project would have no impact on wildlife access to or within Santiago Creek

The proposed project provides little to no suitable habitat for nesting and foraging migratory birds. However, bird species adapted to freeway noise could nest within or adjacent to the proposed project impact area. Temporary impacts to these bird species may include increased noise, dust, lighting from construction activities, and clearing and grubbing to accommodate project features. The project would incorporate BIO-2 to ensure protection of migratory bird species.

e) No Impact

No local policies or ordinances protecting biological resources are relevant to the BSA. Therefore, the Build Alternative would not conflict with local policies or ordinances protecting biological resources.

f) Less than Significant Impact

OCTA Measure M Transportation Investment Plan (M2) NCCP/HCP are applicable to the proposed project. The OCTA Measure M2 NCCP/HCP include measures to minimize take of identified species and their habitats. Avoidance, minimization, and mitigation (if necessary) of impacts on identified species and their habitats will be implemented through a process that verifies that construction activities undertaken as part of the project adhere to a set of protection measures.

3.1.5 Cultural Resources

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?			\boxtimes	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?			\boxtimes	
c) Disturb any human remains, including those interred outside of dedicated cemeteries?			\boxtimes	

CEQA Significance Determinations for Cultural Resources

Determinations are based on Section 2.7, Cultural Resources, and the HPSR for the project (March 2019) and Section 2.11 Paleontology and the PIR/PER for the project (October 2018). In accordance with PRC section 21080.3.1 and AB 52, Caltrans initiated early consultation with California Native American tribes in March 2018. Refer to Chapter 4 of this IS/EA for detailed information pertaining to California Native American Tribe consultation.

a) Less than Significant Impact

Three properties were determined historical resources for the purposes of CEQA [resources in this category would include the CRHR listed or eligible resources (per State Historical Resources Commission determination), resources identified as significant in surveys that meet State Office of Historic Preservation standards, resources that are designated landmarks under local ordinances, and resources that meet the CRHR criteria as outlined in PRC 5024.1.]:

Name	Address/Location	Community	OHP Status Code	Map Reference No.
750 West First Street	750 West First Street	Tustin	5S3	750 West First Street
14841 Yorba Street	14841 Yorba Street	Tustin	2S	14841 Yorba Street
Chamber House	14891 Yorba Street	Tustin	2S	14891 Yorba Street

Table 3.1-1: Eligible Historical Resources

These properties are located outside the direct APE. The proposed project would not result in any changes to the properties' setting or require easements or acquisition on or adjacent to these properties.

b) Less Than Significant Impact

The records search showed that the APE and a 1-mile radius around it has been extensively studied by 171 previous investigations, the results of these investigations show that only one previously documented resource is situated within the APE: a 1914 Craftsman Bungalow residence that is no longer extant. No archaeological resources were identified within the APE as a result of the records search or field survey. In the unlikely event that previously

unidentified cultural materials are unearthed during construction, Project Feature PF-CUL-1 requires if cultural materials are discovered during site preparation, grading, or excavation, the construction contractor will divert all earthmoving activity within and around the immediate discovery area until a qualified archaeologist can assess the nature and significance of the find. At that time, the Caltrans District 12 Environmental Branch Chief will be coordinated with to determine appropriate course of action.

c) Less Than Significant Impact

No human remains were identified within the APE as a result of the record and literature searches, field surveys, and consultation. The project will implement PF-CUL-2 related to inadvertent discovery during site preparation, grading, or excavation.

Project Feature PF-CUL-2 requires that all work in the immediate area be halted if human remains are discovered and the Coroner be notified. At that time, coordination with the Caltrans District 12 Environmental Branch Chief will occur to determine the appropriate course of action. Further laws and provisions are to be followed as appropriate.

3.1.6 Energy

Would the project:	Significant and Unavoidable Impact	Less Than Significant 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?			\boxtimes	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			\boxtimes	

CEQA Significance Determinations for Energy

a) Less Than Significant Impact

Regarding short-term and temporary energy consumption, construction activities would primarily consume diesel and gasoline through operation of heavy-duty construction equipment, material deliveries, and debris hauling. Energy use associated with proposed project construction is estimated to result in the short-term consumption of 310,629 gallons from diesel-powered equipment and 37,432 gallons from gasoline-powered equipment. This represents a small demand on local and regional fuel supplies that would be easily accommodated, and this demand would cease once construction is complete. Moreover, construction-related energy consumption would be temporary, and no permanent new source of energy demand would result from project construction activities. While construction would result in a short-term increase in energy use, construction-related fuel use would have no noticeable effect on peak or baseline demands for energy; and construction design features would help conserve energy. For example, recycled materials will be used where feasible. Recycled products typically have lower manufacturing and transport energy costs since they do not utilize raw materials, which must be mined and transported to a processing facility.

Regarding long-term and permanent energy consumption, operational activities would primarily require energy for transportation fuel, electricity for lighting, and maintenance activities. The consumption of transportation fuel would be the dominant energy use. Implementation of the project would marginally decrease regional fuel consumption in 2035 and would increase regional mobile source fuel consumption by less than 1 percent in 2055. The project does not include new light fixtures or removal or replacement of existing fixtures. Accordingly, the proposed project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources. The impact would be less than significant.

b) Less Than Significant Impact

The project would be consistent with regional and State energy conservation plans. Planning documents with relevant energy assessments include the 2016–2040 RTP/SCS published by SCAG and the 2018 IERP (CEC 2018). The 2016–2040 RTP/SCS includes a comprehensive assessment of regional energy consumption primarily focused on residential and commercial electricity, natural gas, and water use. The 2016–2040 RTP/SCS Draft EIR (SCAG 2015b) includes a brief analysis of transportation fuel consumption. SCAG concluded in the Draft EIR that the 2016-2040 RTP/SCS would have a less than significant impact on increasing petroleum and non-renewable fuel usage because fuel consumption is expected to result in a 26.7 percent net reduction in the SCAG region from the 9.3 billion gallons consumed in 2012 to the projected 6.8 billion gallons consumed in 2040. Transportation fuel use would be less in the project opening and design years than existing/baseline condition. Furthermore, transportation fuel use in 2035 would be less with the project than without the project. A slight increase would occur in 2055 due to increased VMT, although the additional transportation fuel use would represent less than 1 percent increase in fuel use from the No Build Alternative. The project would be consistent with the energy findings in the 2016-2040 RTP/SCS and would not interfere with implementation of the 2016-2040 RTP/SCS.

The 2018 IERP includes key goals to guide the State's energy policy, including reducing petroleum use in cars and trucks by up to 50 percent. The discussion related to this goal broadly focuses on increasing the number of zero- or near-zero emission vehicles operating on the roadway network. It is also noteworthy that improving driving conditions reduces petroleum use. The Traffic Operations Report concludes that AM and PM peak-period vehicle delays would decrease by 19 percent and 6 percent, respectively, in 2035. The AM and PM peak-period vehicle delays would decrease by 14 percent and 4 percent, respectively, in 2055. The congestion improvement would reduce vehicle idling and associated fuel consumption. This would be consistent with the goal of reducing petroleum use in cars and trucks by up to 50 percent, and the project would not interfere with implementation of the 2018 IERP. Accordingly, the proposed project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. The impact would be less than significant.

3.1.7 Geology and Soils

Would the project:	Significant and Unavoidable Impact	Less Than Significant 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:	See below	See below	See below	See below
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?				
ii) Strong seismic ground shaking?			\boxtimes	
iii) Seismic-related ground failure, including liquefaction?			\boxtimes	
iv) Landslides?				\boxtimes
b) Result in substantial soil erosion or the loss of topsoil?			\boxtimes	
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 risks to life or property?			\boxtimes	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				
 f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? 				

CEQA Significance Determinations for Geology and Soils

Determinations are based on Section 2.10, Geology/Soils/Seismology/Topography, Revised District Preliminary Geotechnical Report (May 2018), Section 2.11, Paleontology, and the PIR/PER for the project (October 2018).

a) i) No Impact

The project limits are not in an Alquist-Priolo Earthquake Fault Zone, and no known active or potentially active faults are mapped as crossing or in the immediate vicinity of SR 55. the improvements in the Build Alternative are not expected to be exposed to effects associated with fault displacement or ground rupture.

a) ii) and iii) Less Than Significant Impact

The principal seismic hazard in the vicinity of the project limits is ground shaking resulting from an earthquake associated with the faults in Table 2.10-1. Moderate to intense seismic shaking is likely to occur in the Study Area during the life of the improvements provided by the Build Alternative. As a result, the Build Alternative would be subject to effects associated with seismic shaking that could damage bridges, ramps, other structures or the road surfaces. With design and construction of the Build Alternative consistent with the Caltrans Highway Design Manual (2016), other required standards, and recommendations from the Final Geotechnical Design Report, as required in Project Feature PF-GEO-1 provided in Section 2.10.3, potential for seismic damage to project facilities is less than significant. No mitigation is required.

a) iv) No Impact

As discussed in Section 2.10, the site is not located in an area susceptible to landslides and/or rock fall. Nonseismically induced earth movement is unlikely to occur in the Study Area. No impacts on the Build Alternative related to landslides are expected.

b) Less Than Significant Impact

As discussed in Section 2.10, Construction of the Build Alternative may temporarily disturb soil associated with site preparation, grading, and excavation within the freeway rights-of-way and within the TCEs. Disturbed soil areas result in increased potential for soil erosion during construction compared to existing conditions. The construction contractor would be required to adhere to the requirements of the General Construction Permit and to implement erosion and sediment control BMPs specifically identified in the project Storm Water Pollution Prevention Plan to keep sediment from moving off site and impacting water quality. With implementation of Project Features PF-WQ-1 and PF-WQ-2, described in Section 2.9.3, and Project Feature PF-GEO-2, described in Section 2.10.3, soil erosion impacts would be less than significant.

c) Less Than Significant Impact

As, discussed in Section 2.10, shallow groundwater was not encountered in the as-built borings along the project alignment. Sandy layers encountered in the borings were generally medium dense to dense; based on the available information, liquefaction potential is not a design consideration for the project. However, seismically induced settlement within loose to moderately dense sandy soil could occur and is anticipated to be on the order of 1.0 inch. Potential for unstable soils would be evaluated in Project Feature PF-GEO-1. Impacts to the Build Alternative due to unstable soils would be less than significant.

d) Less than Significant Impact

As discussed in Section 2.10, Based on the as-built LOTB, the near-subsurface soils along the project alignment consist mainly of sand, silty sand, and sandy silt from Main Street to Fairhaven Avenue and at Katella Avenue. The near-subsurface soils at Lincoln Avenue consist mainly of silty clay and sand with silt and gravel. Potential for expansive soils would be evaluated in Project Feature PF-GEO-1. Impacts to the Build Alternative due to expansive soils would be less than significant.

e) No Impact

The Build Alternative would not use septic tanks or alternative methods for disposal of wastewater into subsurface soils and would not connect to existing public wastewater infrastructure.

f) Less Than Significant with Mitigation Incorporated

No paleontological resources were observed or collected during the survey; however, sediments conducive to fossil preservation, including those of the Pliocene Fernando Formation, were observed. The fine-grained material characteristic of these sediments is favorable for harboring recognizable and intact scientifically significant vertebrate fossils. Excavations (including drilling) into areas containing native Miocene, Pliocene, and Pleistocene sediments may result in significant impacts to paleontological resources.

The following Mitigation Measures are proposed:

- PALEO-1 Prior to construction, or initiated at the 65 percent Plans, Specification and Estimate (PS&E) design phase per Caltrans process, a Paleontological Mitigation Plan (PMP) will be prepared. It should provide recommended monitoring areas based on proposed construction activities and locations in sensitive geologic formations, depth of excavation, and results of geotechnical studies completed in the Area of Project Disturbance (APD) and immediate vicinity; a description of a worker training program; detailed procedures for monitoring, fossil recovery, laboratory analysis, and museum curation; notification procedures in the event of a fossil discovery by a paleontological monitor or other project personnel; and a potential cost estimate for mitigation. A curation agreement with a qualified repository with a curator on staff and retrievable storage will be required if paleontological specimens requiring preservation are identified.
- PALEO-2 Construction monitoring should initially be implemented for excavations occurring in areas of sediments with paleontological high sensitivity, with the exception of pile-driving activities and drilling using an auger bit that is less than 3 feet in diameter. Excavations in areas of low sensitivity sediments should be periodically spot checked when impacted depths exceed 5 feet to check for the presence of underlying older, high sensitivity deposits unless the depth to underlying sensitive sediments can be determined more precisely during the geotechnical review conducted during preparation of the PMP. If it is determined that only Quaternary young alluvial fan deposits (low paleontological potential [Caltrans 2016a]), Quaternary young wash deposits (low paleontological potential [Caltrans 2016a]), Quaternary young landslide deposits (low paleontological potential [Caltrans 2016a]), or artificial fill (low paleontological potential [Caltrans 2016a]) is impacted, monitoring and spot checking should be reduced or halted at the direction of the Principal Paleontologist. Quaternary young alluvial fan, wash, and landslide sediments and artificial fill should not be monitored. However, any potential fossils in these sediments that are unearthed during construction should be evaluated by the Principal Paleontologist as described in the PMP.

With implementation of PALEO-1 and PALEO-2, the Build Alternative would not result in significant impacts to paleontological resources or unique geologic features.

3.1.8 Greenhouse Gas Emissions

Would the project:	Significant and Unavoidable Impact	Less Than Significant 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?	See table note	See table note		See table note

Note: Caltrans has used the best available information based to the extent possible on scientific and factual information to describe, calculate, or estimate the amount of greenhouse gas emissions that may occur related to this project. The analysis included in the climate change section of this document provides the public and decision-makers as much information about the project as possible.

a) *and b*)

Caltrans has used the best available information, based to the extent possible on scientific and factual information, to describe, calculate, or estimate the amount of greenhouse gas emissions that may occur related to this project. The analysis included in the climate change section of this document provides the public and decision-makers as much information about the project as possible.

Emissions would decrease in 2035 and 2055 compared to the existing condition primarily because of fleet turnover and improvements in exhaust controls and fuel efficiency. When compared to the No Build Alternative, the Build Alternative would result in slight reductions in annual GHG emissions in 2035 and marginal increases in annual GHG emissions in 2055. The analysis for 2055 demonstrates that a slight increase in GHG emissions would occur when comparing the Build and No Build Alternatives. The emissions are calculated using emission rates from the emission factors (EMFAC) model along with regional VMT and speed data from the traffic analysis. There would be a slight increase in the regional VMT, which leads to a slight increase in GHG emissions. Notably, the traffic analysis also includes VHD. As shown in Table 3.2-2, systemwide VHD would decrease in the AM and PM peak hours in both 2035 and 2055 despite the VMT increase in 2055 and localized congestion at bottlenecks and some segments. The VHD metric demonstrates that the Build Alternative includes systemwide improvements that contribute to GHG reductions. In the 2055 design year, the Build Alternative would result in more GHG emissions than the No Build Alternative, although the increase would be less than 1 percent in annual emissions. Because there is a reduction in future emissions with the project compared to existing emissions, there is evidence in substantial progress in reducing emissions and the impact is considered less than significant.

A detailed discussion regarding the project's direct and indirect impacts with respect to global climate change is provided in Section 3.2. Caltrans remains committed to implementing measures to reduce the potential effects of the project. These measures are outlined in the climate change section that follows the CEQA checklist and related discussions.

3.1.9 Hazards and Hazardous Materials

Would the project:	Significant and Unavoidable Impact	Less Than Significant 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?			\boxtimes	
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 compiled 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 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?				

CEQA Significance Determinations for Hazards and Hazardous Materials

Determinations are based on Section 2.12, Hazardous Waste/Materials, and Initial Site Assessment for the project (September 2014, updated 2018).

a) Less Than Significant Impact

During construction, there is the potential to encounter hazardous materials in soils and existing road and structures materials, including ADL, LBP, and ACM. Typical hazardous materials anticipated to be used during construction of the Build Alternative (e.g., solvents, paints, fuels) and hazardous wastes generated during construction would be handled in accordance with applicable federal and State regulations and Caltrans policies regarding the use, storage, handling, disposal, and transport of these materials. Project Features PF-HAZ-1 through PF-HAZ-6 in Section 2.12 would ensure proper handling of hazardous waste and materials, and potential impacts related to hazardous materials would be less than significant.

Routine maintenance activities during operation of the Build Alternative would comply with applicable regulations with respect to the use, storage, handling, transport, and disposal of potentially hazardous materials. Operation of the Build Alternative would not result in a

significant permanent impact related to the transport or emissions of hazardous waste or materials.

b) Less Than Significant Impact

The Build Alternative would not create a substantial hazard to the public or the environment through any reasonably foreseeable upset or accident conditions involving the release of hazardous materials. As discussed in a) above, routine hazardous materials would be used, handled, stored, disposed of, and transported during construction of the Build Alternative in accordance with applicable local, State, and federal regulations. During operation of the Build Alternative Caltrans, the California Highway Patrol, and local police and fire departments are trained in emergency response procedures for safely responding to accidental spills of hazardous substances on public roads and would not result in a significant permanent impact related to transport or upset of hazardous waste and materials.

c) Less Than Significant Impact

The following schools are located within 0.5 mile of the alignment of the Build Alternative: Robert Heideman Elementary School at 15571 Williams Street, Tustin; Helen Estock Elementary School at 14741 North B Street, Tustin; La Veta Elementary School at 2800 East La Veta Avenue, Orange; Palmyra Elementary School at 1325 East Palmyra Avenue, Orange; Handy Elementary School at 860 North Handy Street, Orange; and Nohl Canyon Elementary School at 4100 Nohl Ranch Road; Anaheim. No schools are known to be planned within 0. 5 mile of the alignment of the Build Alternative. As discussed in Responses a) and b) above, routine hazardous materials would be used, handled, stored, disposed of, and transported during construction of the Build Alternative in accordance with applicable local, State, and federal regulations and would result in less than significant impacts related to the emissions or handling of hazardous waste or materials near existing or proposed schools.

d) No Impact

No locations within the project footprint are located on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

e) No Impact

The project footprint is not located within an airport land use plan.

f) Less Than Significant Impact

As discussed in Sections 2.4, Utilities and Emergency Services, and 2.5, Traffic and Transportation/Pedestrian and Bicycle Facilities, construction activities expected to require temporary closures of the SR 55 mainline, interchange ramps, and local arterials include:

- Installation, moving, and removal of construction barriers (k-rails)
- Pavement restriping
- Falsework erection and removal
- Construction of retaining walls and tie-back walls

- Widening of undercrossing structures and foundations
- Installation and removal of overhead signs and loop detectors
- Placement of concrete pavement using rapid set concrete, such as at ramp termini
- Asphalt and concrete pavement construction and overlay operations
- Utility work
- Extension or modifications of drainage channels

Project Feature PF-UES-2 requires the contractor to coordinate all temporary mainline, ramp, and arterial roadway closures and detour plans with law enforcement, fire protection, and emergency medical service providers to minimize temporary delays in emergency response times, including the identification of alternative routes for emergency vehicles and routes across the construction areas that are developed in coordination with the affected agencies and corridor cities. Project impacts to emergency response or evaluation plans would be less that significant.

g) No Impact

Wildland fires occur in geographic areas that contain the types and conditions of vegetation, topography, weather, and structure density susceptible to risks associated with uncontrolled fires that can be started by lightning, improperly managed campfires, cigarettes, sparks from automobiles, and other ignition sources, typical of areas designated as very high fire hazard zones by the California Department of Forestry and Fire Protection. The proposed project is an urban built-out area and is not within a location designated as a very high fire hazard severity zone in with in Orange County. The Build Alternative would not expose people or structures to a significant risk of loss, injury, or death associated with wildland fires.

3.1.10 Hydrology and Water Quality

Would the project:	Significant and Unavoidable Impact	Less Than Significant 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 ground water quality?				\boxtimes
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:	See below	See below	See below	See below
 (i) result in substantial erosion or siltation on- or off-site; 			\boxtimes	
 (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; 			\boxtimes	

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or				
(iv) impede or redirect flood flows?				\boxtimes
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			\boxtimes	
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				\boxtimes

CEQA Significance Determinations for Hydrology and Water Quality

Determinations are based on Section 2.8, Hydrology and Floodplains, and Section 2.9, Water Quality and Stormwater Runoff, as well as the Water Quality Technical Memo (November 2018), Location Hydraulic Study (April 2018), Flood Plain Summary Report, and the Storm Water Data Report (March 2019) for the project.

a) No Impact

During construction of the Build Alternative, excavated soil would be exposed and there would be an increased potential for soil erosion compared to existing conditions. The total DSA would be 15.65 acres. In addition, chemicals, liquid products, petroleum products (such as paints, solvents, and fuels), concrete-related waste, sanitary waste, and trash and debris may be spilled or leaked during construction with the potential for those pollutants of concern to be transported via storm runoff into receiving waters. Project Feature PF-WQ-2, provided in Section 2.9.3, requires the design, implementation, and maintenance of construction BMPs that would address the potential effects of soil erosion and pollutants of concern on receiving waters. The project construction would also be required to comply with the requirements of the applicable NPDES permit. Based on compliance with Project Feature PF-WQ-1 and the NPDES permit requirements, water quality impacts during construction of the Build Alternative are less than significant.

The Build Alternative would result in permanent increases in impervious surface area by 2.90 acres, compared to the existing freeway facility. An increase in impervious area would increase the volume and potentially pollutants in runoff during storm events to receiving waters. As shown in Project Features PF-WQ-1, PF-WQ-2, PF-WQ-3, and PF-WQ-4 in Section 2.9.3, the operation of the Build Alternative would be required to comply with the requirements of the NPDES permit and Construction General Permit issued by the SWRCB. This would include coordination with the Santa Ana RWQCB with respect to feasibility, maintenance, and monitoring of treatment BMPs as set forth in the Caltrans Statewide SWMP. Based on compliance with these Caltrans requirements as shown in Project Features PF-WQ-1, PF-WQ-3, and PF-WQ-4, permanent impacts to water quality would be less than significant.

b) Less Than Significant Impact

Dewatering may be required during construction of the Build Alternative. If construction site dewatering is required it shall comply with Order No. R8-2015-0004 (NPDES No. CAG998001) for general WDRs for discharges to surface waters that pose an insignificant (de minimus) threat to water quality within the Santa Ana Region. This order would be applicable to the project if it can be demonstrated that the groundwater being discharged to surface waters does not contain pollutants of concern Therefore, no significant impacts to surface water during construction activities as a result of site dewatering, are anticipated.

c) (i), (ii) and (iii) Less Than Significant Impact

Under the Build Alternative, the project would include roadway and ramp widening, relocation of a Park and Ride lot, and construction of retaining walls. These project improvements would impact six concrete-lined features that would be relocated, realigned, or boxed. These drainages would continue to convey existing flows and would not result in any substantial erosion. Erosion during project construction and operation would be addressed based on compliance with the applicable NPDES permit and Project Features PF-WQ-1 through PF-WQ-4.

The Build Alternative proposes to modify an existing transportation facility. The Build Alternative would not substantively increase the total impervious surface areas as noted above and would not increase peak storm flows to the extent they would necessitate additional capacity that would negatively impact downstream drainage facilities Additionally, considering PF-WQ-1 and PF-WQ-2 would minimize incremental pollutant loading; and impacts would be less than significant.

According to FEMA FIRM Panel Number 06059C0162J (Orange County, CA, Last Revised: December 3, 2009), the project is located within a 100-year floodplain contained within a concrete channel (Zone AE, areas where base flood elevations are determined) associated with Santiago Creek where the Santiago Creek Bridge (Bridge No. 55-0033) crosses SR 55. In addition, the eastern side of the project area along the SR 55 between Santiago Creek and I-5 is designated as Zone X (areas of 0.2 percent annual chance flood; areas of 1.0 percent annual chance flood with average depths of less than 1.0 foot or with drainage areas less than 1.0 square mile; and areas protected by levees from 1.0 percent annual chance flood). The Build Alternative does not introduce any improvements that would change channel hydraulics or increase the risk of flooding and inundation. Water surface elevation would change minimally, and waters would remain within their respective channels. Therefore, the Build Alternative does not include drainage modifications that would result in substantial erosion, siltation, or flooding on or off the project site; and impacts are less than significant.

c) (iv) No Impact

The project construction and operation activities would not reduce or otherwise affect the flood storage capacity and would not modify flood flows. Furthermore, construction activities would be limited to the dry season. Construction activities under the Build Alternative would not result in temporary adverse impacts related to hydrology and floodplains. Existing drainage patterns will be maintained on the ramps and on the freeway.

It is not expected that any major culvert and bridge widening improvements would be required for this project.

d) Less Than Significant Impact

Runoff associated with the Build Alternative would be treated to remove pollutants of concern as required in Project Features PF-WQ-1 and PF-WQ-2 in Section 2.9.3. In addition, also refer to refer to a) and e), above. Impacts to water quality as a result of the Build Alternative would be less than significant. The Build Alternative does not propose placing any structures within a 100-year floodplain. As discussed in Section 2.10, risk associated with tsunamis, seiches, and mudflows are negligible.

e) No Impact

The Build Alternative would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

3.1.11 Land Use and Planning

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

CEQA Significance Determinations for Land Use and Planning

Determinations are based on Sections 2.1, Land Use, and 2.3, Community Impacts.

a) No Impact

The proposed improvements are located within the SR 55 corridor. Within the corridor, the cities of Tustin, Orange, and Anaheim are located on both the east and west sides of SR 55. East/west access is provided by 14 over/undercrossings. The project would be primarily constructed within the existing State right-of-way (see Section 2.3.2.3 for detailed discussion of TCEs) and would not remove any east/west access. The proposed Build Alternative has no potential to result in additional division of the cites compared to the existing condition.

b) No Impact

The project is listed in the 2016–2040 financially constrained RTP/SCS which was found by SCAG to conform on April 7, 2016; and FHWA and FTA made a regional conformity determination finding on June 2, 2016. The project is also included in SCAG financially constrained 2019 FTIP (SCAG 2018), page 2 of the Orange County Project Listing for State Highways. The SCAG 2019 FTIP was determined to conform by FHWA and FTA on December 17, 2018. The design concept and scope of the project is consistent with the

project description in the 2016–2040 RTP/SCS, 2019 FTIP, and the "open to traffic assumptions of the SCAG regional emissions analysis. Thus, the Build Alternative is consistent with these regional and federal transportation plans.

The Build Alternative would be consistent with the goals and policies in the General Plans of the affected cities as detailed in Table 2.1-2. The Build Alternative would not change existing land use patterns along SR 55 because SR 55 is an existing transportation facility in a highly developed area, and the Build Alternative would not require any property acquisition or amendment to any General Plans and is consistent with local plans and policies.

3.1.12 Mineral Resources

Would the project:	Significant and Unavoidable Impact	Less Than Significant 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?				\boxtimes
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?				

CEQA Significance Determinations for Mineral Resources

a) and b) No Impact

The proposed project would be primarily constructed within the existing right-of-way for SR 55 (see Section 2.3.2.3 for detailed discussion of TCEs). No mineral resources or mineral resource recovery sites are known to be located within the State right-of-way between I-5 and SR 91.

3.1.13 Noise

Would the project result in:	Significant and Unavoidable Impact	Less Than Significant 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?			\boxtimes	
c) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				

CEQA Significance Determinations for Noise

Determinations are based on Sections 2.14, Noise, and the Noise Study Report (September 2018) prepared for the project.

a) Less Than Significant Impact

Noise levels during construction of the Build Alternative may impact noise sensitive receptors. Typical construction noise levels may reach 86 dBA maximum instantaneous noise level (L_{max}) at a distance of 50 feet from the noise sources. The following minimization measure, described in detail in Section 2.14.4, would minimize construction noise impacts under the Build Alternative: Project Feature PF-N-1: Compliance with the Caltrans Standard Specifications, Section 14-8.02, "Noise Control" during construction.

The Build Alternative would not result in any substantial increases in permanent noise levels in the Study Area and would not result in significant permanent noise impacts. Noise abatement measures, including noise barriers, have been evaluated to minimize the noise impacts. With implementation of the noise abatement measures, the noise levels would be minimized and long-term noise impacts resulting from the proposed project are less than significant.

b) Less Than Significant Impact

The closest sensitive receptors are within 50 feet of project construction areas. Sensitive receptor locations may be subject to short-term noise higher than 86 dBA L_{max} that is generated by construction activities along the project alignment. Project Feature PF-N-1 requires compliance with Caltrans Standard Specifications Section 14-8.02 (2015) and would minimize construction noise impacts on sensitive land uses adjacent to the project site. Construction noise from the contractor's operations between the hours of 9:00 p.m. and 6:00 a.m. Shall not exceed 86 dBA L_{max} at a distance of 50 feet.

Compliance with local Noise Ordinances and the Caltrans Standard Specifications required in Project Feature PF-N-1 in Section 2.14 would also minimize vibration impacts. Therefore, groundborne vibration and noise impacts are considered less than significant.

c) No Impact

JWA is located approximately 4.2 miles southwest from the southern terminus of the project. The Build Alternative would not expose people using SR 55 or living or working in the areas surrounding SR 55 to aviation-related noise levels different than would occur under existing or No Build conditions. The Build Alternative would not result in aviation-related noise impacts.

3.1.14 Population and Housing

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				\boxtimes
 b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? 				\boxtimes

CEQA Significance Determinations for Population and Housing

Determinations are based on Section 2.2, Growth.

a) and b) No Impact

The Build Alternative would provide improvements to the existing SR 55 as discussed in Chapter 1. The proposed project would be constructed primarily within the existing State right-of-way (see Section 2.3.2.3 for detailed discussion of TCEs) and would not directly or indirectly induce substantial population growth or displace any housing or people.

3.1.15 Public Services

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:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Fire protection?			\boxtimes	
Police protection?			\boxtimes	
Schools?			\boxtimes	
Parks?			\boxtimes	
Other public facilities?			\boxtimes	

CEQA Significance Determinations for Public Services

a) Less than Significant Impact

As discussed in Sections 2.4 and 2.5, Construction activities expected to require temporary closures of the SR 55 mainline, interchange ramps, and local arterials include those that could impact response times:

- Installation, moving, and removal of construction barriers (k-rails)
- Pavement restriping

- Falsework erection and removal
- Construction of retaining walls and tie-back walls
- Widening of undercrossing structures and foundations
- Installation and removal of overhead signs and loop detectors
- Placement of concrete pavement using rapid set concrete, such as at ramp termini
- Asphalt and concrete pavement construction and overlay operations
- Utility work
- Extension or modifications of drainage channels

Project Feature PF-UES-2 requires the contractor to coordinate all temporary mainline, ramp, and arterial roadway closures and detour plans with law enforcement, fire protection, and emergency medical service providers to minimize temporary delays in emergency response times, including the identification of alternative routes for emergency vehicles and routes across the construction areas that are developed in coordination with the affected agencies and corridor cities. The roadway improvements associated with the Build Alternative would not generate new students or additional demand for school capacity and would not induce population growth or additional demand for park capacity. Therefore, project impacts to emergency response or evacuation plans would be less than significant.

Other than a potential for delays to public service response, the Build Alternative would have no impact on physical government facilities.

3.1.16 Recreation

Project impacts:	Significant and Unavoidable Impact	Less Than Significant 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?				\boxtimes
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?				\boxtimes

CEQA Significance Determinations for Recreation

Determinations are based on Section 2.2, Growth, and Appendix A: Resources Evaluated relative to the Requirements of Section 4(f).

a) and b) No Impact

The Build Alternative would not 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. The Build Alternative would not include recreational facilities or require the construction or expansion of recreational facilities that would have an adverse physical effect on the environment.

3.1.17 Transportation

Would the project:	Significant and Unavoidable Impact	Less Than Significant 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?			\boxtimes	
b) Would the project 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)?				\boxtimes
d) Result in inadequate emergency access?			\boxtimes	

CEQA Significance Determinations for Transportation

Determinations are based on the Final Traffic Operations Report and Traffic Analysis Addendum prepared for the SR 55 (I-5 to SR 91) Widening Project Approval/Environmental Document, dated July 2018 (July 2018) and dated August 2, 2019 (August 2019), and in Section 2.5, Traffic and Transportation/Pedestrian and Bicycle Facilities.

a) Less Than Significant Impact

As discussed in the Section 2.1, Land Use, the Build Alternative would not conflict with adopted policies, plans, or programs supporting alternative transportation modes. The permanent improvements in the Build Alternative would not affect the existing bike facilities at the arterial overcrossings or undercrossings or on the east and west sides of the SR 55 corridor. The arterial improvements would also include features consistent with ADA requirements. As a result, the Build Alternative would not conflict with alternative transportation modes and impacts would be less than significant. The Build Alternative is consistent with the applicable local General Plans and regional transportation plans to reduce congestion and improve operation within the project limits, and impacts are less than significant.

Construction of the Build Alternative would temporarily impact traffic circulation and pedestrian and bicycle access in the vicinity of the project limits. Those impacts could include short-term closures of freeway and arterial facilities and modifications to the existing facilities. Temporary closures would be limited to overnight (between 10:00 p.m. and 5:00 a.m.). The potential construction traffic impacts described in Section 2.5.3 would result in typical construction delays within the project areas. Standard project features minimize potential temporary impacts on motorists, pedestrians, bicyclists, and public transit; and impacts are less than significant.

Table 2.5-3, Table 2.5-7, and Table 2.5-11 in Section 2.5, show the levels of service for the Existing, Build Alternative, and the No Build Alternative in the AM and PM peak hours under the existing condition, 2035, and 2055. Based on system-wide traffic metrics for opening year (Table 2.510) and design year (Table 2.5-14), increasing congestion along the

SR 55 corridor in 2035 and 2055 would result in high vehicle delay under the No Build Alternative in both the AM and PM peak periods.

Opening Year (2035) corridor travel times during the AM peak hour, the northbound vehicles would travel at approximately 60 mph between I-5 and SR 22 and then expect moderate slowdown to 51 mph between SR 22 and SR 91. In the southbound direction, substantial congestion along southbound SR 55 under the No Build Alternative would result in an average speed of 30 mph between SR 91 and SR 22 and less than 30 mph between SR 22 and I-5. During the PM peak hour, significant congestion along the northbound SR 55 would result in an average speed of 26 mph through the study corridor, while the southbound SR 55 traffic would flow much better, with a speed of 60 mph from SR 91 to SR 22 and approximately 55 mph from SR 22 to I-5.

Horizon year (2055) corridor travel time during the AM peak hour, the northbound vehicles would travel at approximately 50 mph between I-5 and SR 22 and then expect moderate slowdown to 30 mph between SR 22 and SR 91. In the southbound direction, substantial congestion along southbound SR 55 under the No Build Alternative would result in an average speed of 27 mph between SR 91 and SR 22 and 24 mph between SR 22 and I-5. During the PM peak hour, significant congestion along the northbound SR 55 would result in an average speed of approximately 25 mph through the study corridor, while the southbound SR 55 traffic would flow much better with a speed of 57 mph from SR 91 to SR 22 and 51 mph from SR 22 to I-5.

b) Less Than Significant Impact

According to the 2017 Orange County Congestion Management Program (CMP) prepared by OCTA, four study intersections are included in the CMP Highway System: SR-55 NB Ramps/Irvine Boulevard, SR-55 SB Ramps/Irvine Boulevard, SR-55 NB Ramps/Katella Avenue, and SR-55 SB Ramps/Katella Avenue. The level of service (LOS) standard for CMP intersections is LOS E. The performances of the four CMP intersections as forecasted in the traffic report for 2035 and 2055 are described below:

Opening Year 2035

Under the Build Alternative, the SR-55 NB Ramps/Irvine Boulevard intersection would operate at LOS C and D during the AM and PM peak hours; SR-55 SB Ramps/Irvine Boulevard intersection would operate at LOS C during both peak hours; SR-55 NB Ramps/Katella Avenue intersection would operate at LOS C and D during the AM and PM peak hours; and SR-55 SB Ramps/Katella Avenue intersection would also operate at LOS C and D during the AM and PM peak hours; C and D during the AM and PM peak hours; C and D during the AM and PM peak hours.

Design Year 2055

Under the Build Alternative, the SR-55 NB Ramps/Irvine Boulevard intersection would operate at LOS C during both the AM and PM peak hours; SR-55 SB Ramps/Irvine Boulevard intersection would also operate at LOS C during both peak hours; SR-55 NB Ramps/Katella Avenue intersection would operate at LOS B and D during the AM and PM peak hours; and SR-55 SB Ramps/Katella Avenue intersection would also operate at LOS C and B during the AM and PM peak hours.

In addition, a total of 10 study intersections are projected to operate at LOS E or F during one or both peak hours under the Build Alternative during the Opening Year 2035. However, none of the 10 intersections would expect degradation from the No Build Alternative, and majority of these intersections would expect reduced delay when compared to the No Build Alternative. All other intersections would operate at acceptable LOS D or better conditions during both peak hours.

During the Design Year 2055, a total of 12 study intersections are projected to operate at LOS E or F during one or both peak hours under the Build Alternative. However, none of these intersections would expect degradation from the No Build Alternative, and majority of them would expect reduced delay when compared to the No Build Alternative. All other intersections would operate at acceptable LOS D or better conditions during both peak hours.

Since the Build Alternative would not exceed the LOS E standard identified in the CMP, it would not conflict with the Orange County CMP. No mitigation is required.

c) No Impact

The Build Alternative would include an additional lane in each direction and associated ramp improvements for an existing freeway and would not require any reconfiguration to the existing corridor or increase hazards due to a geometric design feature or incompatible use. The Build Alternative would be designed, constructed, and operated consistent with the Caltrans Highway Design Manual (2016d) and other applicable standards and specifications for freeways, ramps, arterial intersections, retaining walls, noise barriers, drainage features, and utility relocations/modifications; and impacts would be less than significant.

d) Less Than Significant Impact

Construction of the Build Alternative would result in temporary impacts to traffic circulation, including emergency services. Those impacts are addressed with standard Caltrans Project Features that are included in the project. Project Feature PF-T-1 and PF-UES-2 address requirements for coordination with emergency service providers and accommodation of emergency travel routes and access to, through, and around active construction areas. During project operation, the Build Alternative would reduce traffic congestion and travel times on SR 55. The improvements in the Build Alternative are likely to reduce delay, and impacts are less than significant.
3.1.18 Tribal Cultural Resources

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:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or				
b) 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.				

CEQA Significance Determinations for Tribal Cultural Resources

The potential for the Build Alternative to adversely impact Tribal Cultural Resources was assessed in the HPSR (March 2019); the attachments to the HPSR; Section 2.7, Cultural Resources; and by adhering to AB 52. AB 52 went into effect on July 1, 2015, proposing to include tribal cultural resources in the CEQA analysis, and introducing a new class of resources: Tribal Cultural Resources. The California Office of Administrative Law approved the changes to the CEQA Checklist to incorporate the Tribal Cultural Resources Questions on September 27, 2016. The project is subject to the requirements of AB 52, the CEQA Tribal Consultation law. As such, in addition to the initial Native American coordination, consultation under AB 52 was initiated by Caltrans on March 14. 2018. Letters requesting information about cultural resources in the project area were sent via certified first-class mail to all of the tribal contacts identified by the NAHC on March 14, 2018. The tribal contacts included:

- Ralph Goff, Chairperson, Campo Band of Mission Indians
- Michael Garcia, Vice Chairperson, Ewiiaapaayp Tribal Office
- Robert Pinto, Chairperson, Ewiiaapaayp Tribal Office
- Andrew Salas, Chairperson, Gabrieleno Band of Mission Indians Kizh Nation
- Anthony Morales, Chairperson, Gabrieleno/Tongva San Gabriel Band of Mission Indians
- Sandonne Goad, Chairperson, Gabrielino/Tongva Nation
- Robert Dorame, Chairperson, Gabrielino Tongva Indians of California Tribal Council
- Charles Alvarez, Chairperson, Gabrielino-Tongva Tribe
- Erica Pinto, Chairperson, Jamul Indian Village
- Sonia Johnston, Chairperson, Juaneño Band of Mission Indians
- Matias Belardes, Chairperson, Juaneño Band of Mission Indians Acjachemen Nation Belardes
- Teresa Romero, Chairperson, Juaneño Band of Mission Indians Acjachemen Nation Romero
- Gwendolyn Parada, Chairperson, La Posta Band of Mission Indians

- Javaughn Miller, Tribal Administrator, La Posta Band of Mission Indians
- Angela Elliott Santos, Chairperson, Manzanita Band of Kumeyaay Nation
- John Valenzuela, Chairperson, San Fernando Band of Mission Indians
- Allen F. Lawson, Chairperson, San Pasqual Band of Mission Indians
- Cody J. Martinez, Chairperson, Sycuan Band of Kumeyaay Nation
- Robert Welch, Chairperson, Viejas Band of Kumeyaay Indians

Each letter notified the tribe of the proposed project, described the project components, and summarized the investigations being conducted to identify cultural resources within the project APE, including the results of the NAHC SLF search, record search, and previous cultural resources studies conducted within the APE. Maps of the project location and APE were included. Each letter invited the tribe to participate in consultation for the proposed project. Follow-up phone calls were made to each tribal contact upon confirmation of receipt of the letter. No response was received from 17 of the 19 contacted tribes. Responses were received from two of the tribes: the Viejas Band of Kumeyaay Indians and the Gabrieleno Band of Mission Indians – Kizh Nation. A follow-up email was sent to the tribes. Further details of the tribal coordination process subject to the requirements of AB 52 can be found in Chapter 4, Comments and Coordination.

a) and b) Less Than Significant Impact

No eligible resources were identified within the APE. Tribal consultation did not identify any eligible resources. Project Features PF-CUL-1 and PF-CUL-2 require that if human remains or buried archeological resources are unearthed, work will be stopped and all earthmoving activity within and around the immediate discovery will be diverted away from the area until a qualified archaeologist can assess the nature and significance of the find and/ or the coroner can assess and remove any human remains.

3.1.19 Utilities and Service Systems

Would the project:	Significant and Unavoidable Impact	Less Than Significant 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 telecommunications 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?				\boxtimes
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?				

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?				
e) Comply with federal, state, and local statutes and regulations related to solid waste?			X	

CEQA Significance Determinations for Utilities and Service Systems

Determination are based on Section 2.4, Utilities and Service Systems, and responses to Hydrology and Water Quality above.

a), b) and c) No Impact

The Build Alternative would not require water treatment during construction or operation that would require or result in the construction of new water treatment facilities or infrastructure. The Build Alternative would not generate wastewater or discharge wastewater to the area sewer system. As a result, the Build Alternative would not exceed wastewater treatment requirements or require or result in the construction of new wastewater treatment facilities. The Build Alternative would not require additional electric power or natural gas during construction or operation that would require or result in the construction of new electric or natural gas infrastructure. The Build Alternative would also not require telecommunications facilities during construction or operation.

The use of water during project construction would be limited to water trucked to the site for dust control. The amount of water used during construction would be minimal. The use of water during project operations would be limited to areas in which new landscaping requires short-term watering while the plant material becomes established and areas in which limited use of water for landscaping requires permanent watering. The amount of landscaping provided in the Build Alternative would not differ substantially from the existing amount of landscaping in the limits of SR 55 and would be approximately the same as the existing demand. The Build Alternative would not require the water districts serving the Study Area to provide new or expanded entitlements to meet the need for water during construction and operation of the Build Alternative, and impacts are less than significant.

d) Less Than Significant Impact

Types of waste materials generated during construction are anticipated to include: vegetation, other plant material, and some excess soils and solid waste such as concrete, asphalt, and wood. Construction waste would be recycled in accordance with Caltrans guidelines or would be properly disposed of at an existing landfill. The amount of waste that would be generated during the construction of the Build Alternative would be limited and would occur only during the construction period. The project waste volume would be minimal compared to daily total volumes processed at area recycling facilities and landfills. Waste materials generated during construction and operation of the Build Alternative would be disposed of in

accordance with federal, State, and local regulations related to recycling, which would minimize the amount of waste material entering local landfills; and impacts would be less than significant.

e) Less Than Significant Impact

Any solid waste generated during construction of the Build Alternative would be collected, handled, transported, and disposed of consistent with applicable federal, State, regional, and local regulations. Any hazardous wastes would be collected, handled, transported, and disposed of consistent with applicable federal, State, regional, and local regulations and would not be comingled with general construction wastes. Impacts would be less than significant.

3.1.20 Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?				\boxtimes
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?				\boxtimes
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?				

CEQA Significance Determinations for Wildfire

The proposed project is not located in or near a state responsibility area or land classified as very high fire hazard severity zone. According to the California Department of Forestry and Fire Protection's (Cal Fire's) Orange County Fire Hazard Severity Zone Map, the proposed project is approximately 4.5 miles away from a designated very high fire hazard severity zone in the state responsibility area, within Irvine Regional Park (Cal Fire 2007). The proposed project is approximately 0.65 mile away from a recommended very high fire hazard severity zone in the local responsibility area, within the City of Orange (Cal Fire 2011). The proposed project would implement improvements within an existing alignment, and the area between SR 55 and the fire hazard severity zone is urban and densely developed. There would be no exposure to a significant risk of loss, injury, or death associated with wildland fires or post-fire flooding/landslides for people or structures. Wildfire is also discussed below in Section 3.3.

Project impacts:	Significant and Unavoidable Impact	Less Than Significant 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, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?				
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?				

3.1.21 Mandatory Findings of Significance

CEQA Significance Determinations for Mandatory Findings of Significance

a) Less Than Significant with Mitigation Incorporated

The potential for the Build Alternative to result in significant impacts to biological or paleontological resources is discussed in Sections 2.7 and 2.15 through 2.20. The Build Alternative would not degrade the quality of the environment or permanently impact any animal or plant species or associated habitat. The potential for temporary construction-related impacts to bats and nesting birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code will be avoided, minimized, and/or mitigated to a level below significance after implementation of BIO-1 and BIO-2. The Build Alternative would result in only minimal impacts to areas under the jurisdiction of the CDFW, the RWQCB, and the USACE but would not impact any wetlands.

Based on the results of the HPSR (March 2019), it was determined that no archeological resources are within the APE. Two properties were identified within the APE that appear to be eligible for inclusion in the NRHP and would qualify as historical resources pursuant to CEQA. One other property that was evaluated was not eligible for the NRHP but is considered a historical resource for the purposes of CEQA (Table 3.1-1). Caltrans, pursuant to Section 106 PA Stipulation IX.A and, as applicable, PRC 5024 Memorandum of Understanding Stipulation IX.A.2 (Caltrans 2015a), has determined a Finding of No Historic Properties Affected is appropriate for this undertaking as the Build Alternative would not result in a take or easement of these properties. Additionally, the properties have been adjacent to an existing freeway that was constructed more than 50 years ago. Therefore, the project would not result in a direct or indirect impact to historic properties or impacts to historical resources pursuant to State CEQA Guidelines Section 15064.5(b)(3). However, there is the potential to encounter unknown buried cultural resources or archaeological

materials within the project disturbance limits during construction of the Build Alternative. In the event that previously unknown buried cultural materials are encountered during construction, compliance with Project Feature PF-CUL-1, provided in Section 2.7, would avoid and/or minimize potential impacts to previously unknown cultural resources. To avoid impacts to potential paleontological resources that may be present where excavation may occur in areas of undisturbed soils, a PMP, detailed in Mitigation Measures PALEO-1 and PALEO-2 provided in Section 2.11, would be developed during the final design phase of the project and implemented during the construction phase of the project. The potential to impact subsurface prehistoric resources would be avoided and/or minimized with implementation of Project Features PF-CUL-1 and PF-CUL-2, provided in Section 2.7.

b) Less Than Significant Impact

As discussed in Section 2.22, Cumulative Impacts, in this IS/EA, several transportation projects may be under construction and operation at the same time as the Build Alternative. However, the Build Alternative would result in improved operating conditions along SR 55 within the project limits compared to the No Build Alternative and would not contribute to cumulative considerable adverse effects to other resource areas. Therefore, the impacts of the Build Alternative are not considered cumulatively considerable and are less than significant.

c) Less Than Significant Impact

As discussed in Sections 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.12, 2.13, and 2.14, the Build Alternative would not result in environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly. The Build Alternative would reduce traffic congestion and travel times on SR 55 between I-5 and SR 91. The reduce travel times and decreased congestion would be considered as a beneficial impact on the human environment.

3.2 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to GHG emissions, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity, including carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF₆), and various hydrofluorocarbons (HFCs). CO₂ is the most abundant GHG; while it is a naturally occurring component of Earth's atmosphere, fossil-fuel combustion is the main source of additional, human-generated CO₂.

Two terms are typically used when discussing how the impacts of climate change are addressed: "greenhouse gas mitigation" and "adaptation." Greenhouse gas mitigation covers the activities and policies aimed at reducing GHG emissions to limit or "mitigate" the impacts of climate

change. Adaptation, on the other hand, is concerned with planning for and responding to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels). This analysis will include a discussion of both.

3.2.1 Regulatory Setting

This section outlines federal and State efforts to comprehensively reduce GHG emissions from transportation sources.

3.2.1.1 Federal

To date, no national standards have been established for nationwide mobile-source GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level.

NEPA (42 USC Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

The FHWA recognizes the threats that extreme weather, sea-level change, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA, therefore, supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices .¹ This approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values—"the triple bottom line of sustainability."² Program and project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life.

Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects. The most important of these was the Energy Policy and Conservation Act of 1975 (42 USC Section 6201) and Corporate Average Fuel Economy (CAFE) Standards. This act establishes fuel economy standards for on-road motor vehicles sold in the United States. Compliance with federal fuel economy standards is determined through the CAFE program based on each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the United States.

Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance, 74 Federal Register 52117 (October 8, 2009): This federal EO set sustainability goals for federal agencies and focuses on making improvements in their environmental, energy, and economic performance. It instituted as policy of the United States that federal agencies measure, report, and reduce their GHG emissions from direct and indirect activities.

Executive Order 13693, Planning for Federal Sustainability in the Next Decade, 80 Federal Register 15869 (March 2015): This EO reaffirms the policy of the United States that federal agencies measure, report, and reduce their GHG emissions from direct and indirect activities. It

¹ <u>https://www.fhwa.dot.gov/environment/sustainability/resilience/</u>

² <u>https://www.sustainablehighways.dot.gov/overview.aspx</u>

sets sustainability goals for all agencies to promote energy conservation, efficiency, and management by reducing energy consumption and GHG emissions. It builds on the adaptation and resiliency goals in previous executive orders to ensure agency operations and facilities prepare for impacts of climate change. This order revokes Executive Order 13514.

The U.S. EPA³ in conjunction with the National Highway Traffic Safety Administration (NHTSA) is responsible for setting GHG emission standards for new cars and light-duty vehicles to significantly increase the fuel economy of all new passenger cars and light trucks sold in the United States. The current standards require vehicles to meet an average fuel economy of 34.1 mph by 2016. U.S. EPA and NHTSA are currently considering appropriate mileage and GHG emissions standards for 2022–2025 light-duty vehicles for future rulemaking.

NHTSA and U.S. EPA issued a Final Rule for "Phase 2" for medium- and heavy-duty vehicles to improve fuel efficiency and cut carbon pollution in October 2016. The agencies estimate that the standards will save up to 2.0 billion barrels of oil and reduce CO₂ emissions by up to 1.1 billion metric tons over the lifetimes of model year 2018–2027 vehicles.

Presidential Executive Order 13783, Promoting Energy Independence and Economic Growth, of March 28, 2017, orders all federal agencies to apply cost-benefit analyses to regulations of GHG emissions and evaluations of the social cost of carbon, nitrous oxide, and methane.

3.2.1.2 State

California has been innovative and proactive in addressing GHG emissions and climate change by passing multiple Senate and Assembly bills and EOs including, but not limited to, the following:

EO S-3-05 (June 1, 2005): The goal of this EO is to reduce California's GHG emissions to: (1) year 2000 levels by 2010, (2) year 1990 levels by 2020, and (3) 80 percent below year 1990 levels by 2050. This goal was further reinforced with the passage of AB 32 in 2006 and Senate Bill (SB) 32 in 2016.

AB 32, Chapter 488, 2006: Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 codified the 2020 GHG emissions reduction goals outlined in EO S-3-05, while further mandating that ARB create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." The Legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code Section 38551(b)). The law requires ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

³ U.S. EPA's authority to regulate GHG emissions stems from the U.S. Supreme Court decision in Massachusetts v. EPA (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, U.S. EPA finalized an endangerment finding in December 2009. Based on scientific evidence it found that six GHGs constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act and U.S. EPA's assessment of the scientific evidence that form the basis for U.S. EPA's regulatory actions.

Executive Order S-20-06 (October 18, 2006): This order establishes the responsibilities and roles of the Secretary of the California Environmental Protection Agency (Cal/EPA) and state agencies with regard to climate change.

EO S-01-07 (January 18, 2007): This order sets forth the low carbon fuel standard (LCFS) for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by the year 2020. ARB re-adopted the LCFS regulation in September 2015, and the changes went into effect on January 1, 2016. The program establishes a strong framework to promote the low-carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG reduction goals.

SB 375, Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires ARB to set regional emissions reduction targets for passenger vehicles. The MPO for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land-use, and housing policies to plan how it will achieve the emissions target for its region.

SB 391, Chapter 585, 2009, California Transportation Plan: This bill requires the State's long-range transportation plan to identify strategies to address California's climate change goals under AB 32.

EO B-16-12 (March 2012) orders State entities under the direction of the Governor, including ARB, the California Energy Commission, and the Public Utilities Commission, to support the rapid commercialization of zero-emission vehicles. It directs these entities to achieve various benchmarks related to zero-emission vehicles.

EO B-30-15 (April 2015) establishes an interim statewide GHG emission reduction target of 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets. It also directs ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent (MMTCO₂e). ⁴ Finally, it requires the Natural Resources Agency to update the State's climate adaptation strategy, *Safeguarding California*, every three years and to ensure that its provisions are fully implemented.

SB 32 Chapter 249, 2016, codifies the GHG reduction targets established in EO B-30-15 to achieve a mid-range goal of 40 percent below 1990 levels by 2030.

SB 1386, Chapter 545, 2016, declared "it to be the policy of the state that the protection and management of natural and working lands ... is an important strategy in meeting the state's greenhouse gas reduction goals, and would require all state agencies, departments, boards, and commissions to consider this policy when revising, adopting, or establishing policies,

⁴ GHGs differ in how much heat each trap in the atmosphere (global warming potential, or GWP). CO₂ is the most important GHG, so amounts of other gases are expressed relative to CO₂, using a metric called "carbon dioxide equivalent" (CO₂e). The global warming potential of CO₂ is assigned a value of 1, and the GWP of other gases is assessed as multiples of CO₂.

regulations, expenditures, or grant criteria relating to the protection and management of natural and working lands."

AB 134, Chapter 254, 2017, allocates GHG Reduction Funds and other sources to various clean vehicle programs, demonstration/pilot projects, clean vehicle rebates and projects, and other emissions-reduction programs statewide.

SB 743, Chapter 386 (September 2013): This bill changes the metric of consideration for transportation impacts pursuant to CEQA from a focus on automobile delay to alternative methods focused on vehicle miles traveled, to promote the state's goals of reducing GHG emissions and traffic-related air pollution and promoting multimodal transportation while balancing the needs of congestion management and safety.

SB 150, Chapter 150 2017, Regional Transportation Plans: This bill requires ARB to prepare a report that assesses progress made by each metropolitan planning organization in meeting their established regional GHG emission reduction targets.

EO B-55-18, (September 2018) sets a new statewide goal to achieve and maintain carbon neutrality no later than 2045. This goal is in addition to existing statewide targets of reducing GHG emissions.

3.2.2 Environmental Setting

SR 55 provides a key linkage between the coastal areas in Newport Beach and other beach communities and cities along the corridor in central Orange County. SR 55 has interchanges with several other freeways, providing access to the countywide and regional freeway systems. The proposed project is in an urban area of Orange County with a well-developed road and street network. The LOSSAN, an important passenger and freight rail corridor that connects metropolitan areas from Los Angeles to San Diego, crosses SR 55 south of I-5, approximately 500 feet north of Edinger Avenue in the City of Santa Ana. Metrolink Inland Empire - Orange County Line also travels within the corridor, crossing SR 91 0.75 mile west of the SR 55/91 interchange. Train operations on this segment of the LOSSAN rail corridor include Amtrak's Pacific Surfliner intercity passenger rail service, the Southern California Regional Rail Authority Metrolink commuter rail service, and the Union Pacific Railroad and BNSF Railway freight rail services. JWA is located south of the project area near SR 55 and I-405. Twelve OCTA bus routes operate on SR 55 within the project limits and arterials in the vicinity. The project area is mainly residential, with education, open space and recreation, facilities, general offices, and retail and commercial services land uses mixed in. Traffic congestion during peak hours is not uncommon in the project area. SCAG's RTP/SCS guides transportation and housing development in the project area.

A GHG emissions inventory estimates the amount of GHGs discharged into the atmosphere by specific sources over a period of time, such as a calendar year. Tracking annual GHG emissions allows countries, states, and smaller jurisdictions to understand how emissions are changing and what actions may be needed to attain emission reduction goals. U.S. EPA is responsible for documenting GHG emissions nationwide, and the ARB does so for the state, as required by Health and Safety Code Section 39607.4.

National GHG Inventory

The U.S. EPA prepares a national GHG inventory every year and submits it to the United Nations in accordance with the Framework Convention on Climate Change. The inventory provides a comprehensive accounting of all human-produced sources of GHGs in the United States, reporting emissions of CO₂, CH₄, N₂O, HFCs, perfluorocarbons, SF₆, and nitrogen trifluoride. It also accounts for emissions of CO₂ that are removed from the atmosphere by "sinks" such as forests, vegetation, and soils that uptake and store CO₂ (carbon sequestration). The 1990–2016 inventory found that of 6,511 MMTCO₂e GHG emissions in 2016, 81% consist of CO₂, 10% are CH₄, and 6% are N₂O; the balance consists of fluorinated gases (EPA, 2018a).⁵ In 2016, GHG emissions from the transportation sector accounted for nearly 28.5% of U.S. GHG emissions.



Figure 3.2-1. U.S. 2016 Greenhouse Gas Emissions

State GHG Inventory

ARB collects GHG emissions data for transportation, electricity, commercial/residential, industrial, agricultural, and waste management sectors each year. It then summarizes and highlights major annual changes and trends to demonstrate the state's progress in meeting its GHG reduction goals. The 2018 edition of the GHG emissions inventory found total California emissions of 429 MMTCO₂e for 2016, with the transportation sector responsible for 41% of total GHGs. It also found that GHG emissions have declined from 2000 to 2016 despite growth in population and state economic output.⁶

SR 55 (I-5 to SR 91) Initial Study/Environmental Assessment

⁵ U.S. Environmental Protection Agency. 2018. Inventory of U.S. Greenhouse Gas Emissions and Sinks. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

⁶ 2018 Edition of the GHG Emission Inventory (July 2018). <u>https://www.arb.ca.gov/cc/inventory/data/data.htm</u>



Figure 3.2-2. California 2016 Greenhouse Gas Emissions

Figure 3.2-3. Change in California GDP, Population, and GHG Emissions Since 2000



AB 32 required ARB to develop a scoping plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020 and to update the scoping plan every 5 years. ARB adopted the first scoping plan in 2008. The second updated plan, <u>California's 2017 Climate Change Scoping Plan</u>, adopted on December 14, 2017, reflects the 2030 target established in EO B-30-15 and SB 32. The AB 32 Scoping Plan and the subsequent updates contain the main strategies California will use to reduce GHG emissions.

Regional Plans

ARB sets regional targets for California's 18 MPOs to use in their RTP/SCSs to plan future projects that will cumulatively achieve GHG reduction goals. Targets are set at a percent reduction of passenger vehicle GHG emissions per person from 2005 levels. The proposed project is included in the RTP/SCS for SCAG. The regional reduction target for SCAG is 8 percent for 2020 and 19 percent for 2035. The proposed project is within the jurisdiction of the OCTA. Applicable plans and their relevant policies or objectives are summarized in Table 3.2.1.

Plan Title	GHG Reduction Policies or Strategies
Southern California Association of Governments (SCAG) 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (adopted April 7, 2016)	 Congestion Management Process Integrated multi-modal network Expand the public transit network Strategic capacity and technology enhancements to existing highways Transportation Systems Management and Transportation Demand Management New Infrastructure Livable Corridors/Neighborhood Mobility Areas High Quality Transit Areas and Transit-Oriented Development
OC Go (OCTA Measure M Renewal Ordinance) (Amended March 2016)	 Reduce congestion, improve mobility, and enhance safety in freeways Synchronized traffic lights mean less stop and more go on streets and roads Provides transit connections to Metrolink Supports locally developed transit services for seasonal and year-round community circulators Permanently protected open space properties and restoration projects preserve the land and ensure that valuable animal and plant species can thrive forever for future generations Context-sensitive (including environment) design, for example, environmentally friendly, local, and native landscaping
OCTA OC Go Next 10 Delivery Plan 2017-2026 (Adopted November 2016)	 Improvements to SR 55, including the proposed project (SR 55 between I-5 and SR 91), are included in the Next 10 plan
OCTA Designing Tomorrow Long Range Transportation Plan (adopted November 2018)	 Improvements to SR 55 to add capacity and improve operations are included in the LRTP. Support sustainability Coordination with partner agencies on implementation of sustainability strategies Deliver a financially constrained long-range transportation plan and identify opportunities to reduce funding uncertainty Explore environmental and emission reduction strategies System maintenance

Table 3.2-1: Summary of Applicable Plans and Underlying Policies and Objectives

Plan Title	GHG Reduction Policies or Strategies		
OCTA & Orange County Council of Governments Orange County Sustainable Communities Strategy (SCS) (June 2011)	 Increase regional accessibility to reduce vehicle miles traveled Eliminate bottlenecks and reduce delay on freeways, toll roads, and arterials 		
	Apply Transportation System Management and Complete Street practices to arterials and freeways to maximize efficiency		
	Implement near-term and long-term transportation improvements to provide mobility choices and sustainable transportation options		
	 Acknowledge current local sustainability strategies that will result in or support the reduction of GHG emissions. 		
	Deliver committed projects including M2		
	Expand access for high-occupancy vehicles		
	Improve freeway systems operations		
City of Orange 2010 General Plan	Natural Resources Element: Air Resources and Climate Change		
(adopted March 9, 2010)	Circulation and Mobility Element		
	Infrastructure Element		
	Transportation Demand Management Ordinance		
	Transit-oriented design and development		
	Improve street capacity		
	Maintain and expand roadway and bikeway systems		
	Preparing Climate Action Plan		
	 Environmental Impact Report for General Plan identified that vehicles- related GHG emissions would increase 48% between existing and future development capacity of the then proposed general plan 		
City of Santa Ana Climate Action	Development of Local Retail Service Nodes		
Plan (adopted December 2015)	 Local Residential Nodes near Retail and Employment 		
	Traffic Signal Synchronization Program		
	End of Trip Facilities in New Projects		
	Safe Routes to Schools		
	Design Guidelines for External Bike/Pedestrian/Transit Connectivity		
	Municipal Operations Measure		
City of Santa Ana General Plan (adopted February 1998, re-	Reduce transportation-related and construction-related energy consumption		
formatted January 2010)	Promote a fully integrated multi-modal circulation system		
	Preserve, maintain, and properly use natural and cultural resources		
	Reduce air pollution emissions		
	Conserve water resources		
	 Increase planting of trees, bushes, shrubs, and flowers on public and private property 		
	Manage growth to reduce traffic congestion and to provide adequate transportation and public facilities		
	Ensure that the impacts of development are mitigated		
	Utilize open spaces as means of reinforcing goals set forth for conservation of natural resources		

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Plan Title	GHG Reduction Policies or Strategies
City of Tustin General Plan (adopted November 2018)	 Encourage new development facilitating transit services Monitor "corridor" (urban rail) design study process
,	Safe Routes to Schools
	Encourage ride-sharing
	 Promote funding and development of transit facilities from new development
	 Increase non-motorized modes of transportation
	 Preserve public and private open space lands for active and passive recreational opportunities
	 Reduce air pollution through proper land use, transportation, and energy use planning
	 Improve air quality by influencing transportation choices
	 Protect and conserve water resources, plant and animal communities, overall environs, and energy resources
County of Orange General Plan	Encourage infill and transit-oriented development
(adopted 2005; amended 2015)	Plan an integrated land use and transportation system for transit modes
	 Maximize energy resources conservations in future land use and transportation planning decisions
	 Support utilization of energy conservation measures
	 Support regional transportation programs that reduce energy consumption
	 Encourage use of alternative energy systems
	 Acquire local park lands to landscape open space
	 Manage growth to reduce traffic congestion; provide adequate transportation and public facilities; and protect natural environment

3.2.3 Project Analysis

GHG emissions for transportation projects can be divided into those produced during operation of the SHS and those produced during construction. The primary GHGs produced by the transportation sector are CO₂, CH₄, N₂O, and HFCs. CO₂ emissions are a product of the combustion of petroleum-based products, like gasoline, in internal combustion engines. Relatively small amounts of CH₄ and N₂O are emitted during fuel combustion. In addition, a small amount of HFC emissions are included in the transportation sector.

The CEQA Guidelines generally address GHG emissions as a cumulative impact because of the global nature of climate change (Pub. Resources Code, § 21083(b)(2)). As the California Supreme Court explained, "because of the global scale of climate change, any one project's contribution is unlikely to be significant by itself" (Cleveland National Forest Foundation *v*. San Diego Assn. of Governments [2017] 3 Cal.5th 497, 512.). In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(1) and 15130).

To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. Although climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment.

3.2.3.1 Operational Emissions

CO₂ accounts for 95 percent of transportation GHG emissions in the U.S. The largest sources of transportation-related GHG emissions are passenger cars and light-duty trucks, including sport utility vehicles, pickup trucks, and minivans. These sources account for over half of the emissions from the sector. The remainder of GHG emissions comes from other modes of transportation, including freight trucks, commercial aircraft, ships, boats, and trains, as well as pipelines and lubricants. Because CO₂ emissions represent the greatest percentage of GHG emissions, it has been selected as a proxy within the following analysis for potential climate change impacts generally expected to occur.

The highest levels of CO₂ from mobile sources such as automobiles occur at stop-and-go speeds (0 - 25 mph) and speeds over 55 mph; the most severe emissions occur from 0 - 25 mph (Figure 3.2-4). To the extent that a project relieves congestion by enhancing operations and improving travel times in high-congestion travel corridors, GHG emissions, particularly CO₂, may be reduced.





Source: Barth and Boriboonsomsin 20107

Four primary strategies can reduce GHG emissions from transportation sources: (1) improving the transportation system and operational efficiencies, (2) reducing travel activity), (3) transitioning to lower GHG-emitting fuels, and (4) improving vehicle technologies/ efficiency. To be most effective, all four strategies should be pursued concurrently.

SCAG's 2016-2040 RTP/SCS charts a course for closely integrating land use and transportation in certain areas of the region so that the region as a whole can grow smartly and sustainably. The

⁷ Barth, Matthew and Kanok Boriboonsomsin. 2010. *Real-World Carbon Dioxide Impacts of Traffic Congestion*. Berkeley, CA: University of California Transportation Center. UCTC-FR-2010-11. Available: <u>https://www.researchgate.net/publication/46438207</u>

2016-2040 RTP/SCS includes more than 4,000 projects—ranging from highway improvements, railroad grade separations, and bicycle lanes to new transit hubs and replacement bridges. The regional transit planning behind the creation of the 2016-2040 RTP/SCS accounts for a continued statewide emphasis on reducing GHG emissions and consistency with SB 375. The 2016-2040 RTP/SCS regional air quality modeling demonstrates that the implementation of projects included in the RTP/SCS would create a transportation network that would be consistent with SB 375 GHG reduction goals. The project is listed in the 2016-2040 RTP/SCS and is consistent with regional GHG reduction goals.

OCTA bus routes 213 and 794 include a portion of SR 55. There are no plans at this time to add or modify transit facilities within the project limits as a component of the project; however, improvements to the mainline capacity would provide transit benefits by potentially reducing the travel time of any transit route that is programmed or would use this portion of the SR 55 mainline in the future. No rail transit connections or rail transit lanes run parallel to the segment of SR 55 in the project corridor. Additionally, AB 2542 requires any state or local automobile capacity-increasing project or highway realignment project approved by the California Transportation Commission (CTC) to have considered reversible lanes. An evaluation of reversible lanes was completed, and it was noted that SR 55 from I-5 to SR 91 does not currently exhibit a significant directional imbalance of peak-hour traffic volumes and is not anticipated to do so in the future. Additionally, if reversing a traffic lane were to be implemented, the remaining lanes would not be able to accommodate existing or future traffic volumes because severe traffic congestion presently exists in both directions. Accordingly, reversible traffic lanes are not feasible for the SR 55 Improvement Project. In addition, SCAG has made the Congestion Management Process an integral part of the regional transportation process. A detailed plan that assesses single-occupancy vehicle capacity-enhancing projects is included in an appendix to the 2016–2040 RTP/SCS. The SR 55 corridor within the project limits is currently experiencing congestion and traffic delays during the peak hours due to local, regional, and interregional traffic demand exceeding capacity. In addition, forecasted local and regional traffic demand is expected to increase, resulting in the need to improve the SR 55 corridor. Consistent with the Congestion Management Process, the project is designed to improve traffic operations on SR 55 in Orange County to reduce congestion, increase throughput, and enhance trip reliability for the planning design year of 2055. Table 3.2-2 presents AM and PM peak-hour VHD on SR 55 within the study area, as well as the daily VMT, under existing conditions and in 2035 and 2055 with and without implementation of the project:

Alternative	AM Peak Hour VHD	PM Peak Hour VHD	Daily VMT
Existing/Baseline	8,330	8,520	2,064,511
No Build 2035	9,930	13,110	2,207,707
Build 2035	8,040	12,290	2,204,400
No Build 2055	15,880	16,630	2,408,949
Build 2055	13,730	15,900	2,425,647

Notes: VHD: vehicle hours of delay; VMT: vehicle miles traveled. *Source*: Orange County Transportation Analysis Model, Version 4.0

As shown in Table 3.2-1, peak-hour VHD would be reduced in 2035 and 2055 with implementation of the Build Alternative relative to the No Build Alternative. This decrease is

attributed to expanded capacity and improved traffic flow. The expansion of capacity results in an increase in daily VMT between the Build Alternative and the No Build Alternative in 2055 as the project corridor would accommodate more vehicles. GHG emissions are correlated with VMT and vehicle speeds, such that GHG emissions increase when VMT increases and when congestion increases. In 2035, there is a slight decrease in daily VMT under the Build Alternative relative to the No Build Alternative associated with removal of one of the off-ramps, which would reduce the length of roadways being traversed within the study area.

3.2.3.2 Quantitative Analysis

The ARB developed the EMFAC model to facilitate preparation of statewide and regional mobile source emissions inventories. The model generates emissions rates that can be multiplied by vehicle activity data from all motor vehicles, including passenger cars and heavy-duty trucks, operating on highways, freeways, and local roads in California. Caltrans' CT-EMFAC model uses data derived from EMFAC to streamline project-level emissions analyses. The CT-EMFAC model is recommended by Caltrans for quantifying mobile source emissions from transportation projects on the California State Highway System. The EMFAC2014/CT-EMFAC2014 model has been approved by U.S. EPA and meets the FHWA's transportation planning requirements.

Regional operational emissions associated with project implementation were calculated using CT-EMFAC2014. EMFAC2014 is the most recent on-road emissions modeling tool in California that has been approved for use by the U.S. EPA. EMFAC2014 contains a comprehensive emissions inventory of motor vehicles that provides estimated emission rates for air pollutants. The emission rates provided by EMFAC2014 in grams per mile were used in conjunction with traffic data.

Table 3.2-3 shows mobile source CO₂e emissions (comprising CO₂ and CH₄) in the existing condition and 2035 and 2055 for the No Build and Build Alternatives. Emissions decrease in 2035 and 2055 compared to the existing condition primarily due to fleet turnover and improvements in exhaust controls and fuel efficiency. When compared to the No Build Alternative, the Build Alternative would result in slight reductions in annual GHG emissions in 2035 and marginal increases in annual GHG emissions in 2055.

Alternative	CO₂e Emissions (Metric Tons/Year)	Annual Vehicle Miles Traveled ¹	
Existing/Baseline 2017	274,792	716,385,439	
Open to Traffic 2035 No Build	186,201	766,074,394	
Open to Traffic 2035 Build	184,392	764,926,731	
20-Year Horizon/Design-Year 2055 No Build	192,424	835,905,372	
20-Year Horizon/Design-Year 2055 Build	193,354	841,700,065	

Table 3.2-3: Modeled Annual CO₂e Emissions and Vehicle Miles Traveled, by Alternative

Notes: CO₂e: carbon dioxide (CO₂) and methane (CH₄) emissions

Source: EMFAC 2014

¹ Annual vehicle miles traveled (VMT) values derived from Daily VMT values multiplied by 347, per California Air Resources Board methodology.

The analysis for 2055 demonstrates that a slight increase in GHG emissions would occur when comparing the Build and No Build Alternatives. The emissions are calculated using emission

rates from the EMFAC model along with regional VMT and speed data from the traffic analysis. There would be slight increase in regional VMT, which leads to a slight increase in GHG emissions. Importantly, the traffic analysis also includes VHD. As shown in Table 3.2-2, systemwide VHD would decrease in the AM and PM peak hours in both 2035 and 2055 despite the VMT increase in 2055 and localized congestion at bottlenecks and some segments. The VHD metric demonstrates that the Build Alternative includes systemwide improvements that contribute to GHG reductions.

3.2.3.3 Limitations and Uncertainties with Modeling

While CT-EMFAC has a rigorous scientific foundation and has been vetted through multiple stakeholder reviews, its GHG emission rates are based on tailpipe emission test data. Moreover, the model does not account for factors such as the rate of acceleration and vehicle aerodynamics, which influence the amount of emissions generated by a vehicle. GHG emissions quantified using CT-EMFAC are therefore estimates and may not reflect actual physical emissions. Though CT-EMFAC is currently the best available tool for calculating GHG emissions from mobile sources, it is important to note that the GHG results are only useful for a comparison among alternatives.

3.2.3.4 Construction Emissions

Construction GHG emissions would result from material processing, on-site construction equipment, and traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be offset to some degree by longer intervals between maintenance and rehabilitation activities.

Construction of the project is planned to commence in 2023 and is anticipated to be completed in 2026. The duration of construction is approximately 36 months (3 years). Construction would occur in four phases due to the scale of the project and the need to minimize traffic impacts and maintain traffic during construction. The four phases are Grubbing/Land Clearing, Grading/Excavation, Drainage/Utilities, and Paving. GHG emissions that would be generated during the 3-year construction period were quantified using the Sacramento Metropolitan Air Quality Management District Road Construction Emissions Model (Version 8.1.0). Table 3.2-4 presents the annual average GHG emissions, as well as total GHG emissions that would be generated by construction of the project. In accordance with SCAQMD guidance, the total emissions are amortized over a 30-year period to represent annual emissions.

Alternative	GHG Emissions Metric Tons per Year (MTCO₂e/year)	GHG Emissions Total Metric Tons (MTCO₂e)	GHG Emissions Amortized Annual Metric Tons (MTCO₂e/year)	Construction Duration
Build Alternative	1,542	4,627	154	36 months

Table 3.2-4: Modeled CO₂e Emissions – Construction

Notes: CO_2e includes emissions of carbon dioxide (CO_2), methane (CH_4), and nitrogen oxide (N_2O). Source: SMAQMD Roadway Construction Emissions Model, version 8.1.0. All construction contracts include Caltrans Standard Specifications Section 7-1.02A and 7-1.02C, Emissions Reduction, which require contractors to comply with all laws applicable to the project and to certify they are aware of and will comply with all ARB emission reduction regulations; and Section 14-9.02, Air Pollution Control, which requires contractors to comply with all air pollution control rules, regulations, ordinances, and statutes. Certain common regulations, such as equipment idling restrictions, that reduce construction vehicle emissions also help reduce GHG emissions.

3.2.4 CEQA Conclusion

As discussed above, operational GHG emissions in both 2035 and 2055 would decrease compared to existing conditions. In the 2055 design year, the Build Alternative would result in more GHG emissions than the No Build Alternative, although the increase would be less than 1% in annual emissions. Because there is a reduction in future emissions with the project compared to existing emissions, there is evidence that substantial progress in reducing emissions and the impact is considered less than significant.

3.2.4.1 Greenhouse Gas Reduction Strategies

Statewide Efforts

Major sectors of the California economy, including transportation, will need to reduce emissions to meet the 2030 and 2050 GHG emissions targets. Former Governor Edmund G. Brown promoted GHG reduction goals that involved (1) reducing today's petroleum use in cars and trucks by up to 50 percent; (2) increasing from 33 to 50 percent electricity derived from renewable sources; (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of methane, black carbon, and other short-lived climate pollutants; (5) managing farm and rangelands, forests, and wetlands so they can store carbon; and (6) periodically updating the state's climate adaptation strategy, *Safeguarding California*.

The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that the state build on past successes in reducing criteria and toxic air pollutants from transportation and goods movement. GHG emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reduction of VMT. A key state goal for reducing GHGs is to reduce today's petroleum use in cars and trucks by up to 50% by 2030.

In addition, SB 1386 (Wolk 2016) established as state policy the protection and management of natural and working lands and requires state agencies to consider that policy in their own decision making. Trees and vegetation on forests, rangelands, farms, and wetlands remove carbon dioxide from the atmosphere through biological processes and sequester the carbon in above- and below-ground matter.



Figure 3.2-5. California Climate Strategy

Caltrans Activities

Caltrans continues to be involved on the Governor's Climate Action Team as the ARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. EO B-30-15, issued in April 2015, and SB 32 (2016), set a new interim target to cut GHG emissions to 40 percent below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

California Transportation Plan (CTP 2040)

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet the state's future mobility needs and reduce GHG emissions. In 2016, Caltrans completed the *California Transportation Plan 2040*, which establishes a new model for developing ground transportation systems, consistent with CO₂ reduction goals. It serves as an umbrella document for all the other statewide transportation planning documents. Over the next 25 years, California will be working to improve transit and reduce long-run repair and maintenance costs of roadways and developing a comprehensive assessment of climate-related transportation demand management and new technologies rather than continuing to expand capacity on existing roadways.

SB 391 (Liu 2009) requires the CTP to meet California's climate change goals under AB 32. Accordingly, the CTP 2040 identifies the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the state's transportation needs. While MPOs have primary responsibility for identifying land use patterns to help reduce GHG emissions, CTP 2040 identifies additional strategies in Pricing, Transportation Alternatives, Mode Shift, and Operational Efficiency.

Caltrans Strategic Management Plan

The Strategic Management Plan, released in 2015, creates a performance-based framework to preserve the environment and reduce GHG emissions, among other goals (Caltrans 2015b). Specific performance targets in the plan that will help to reduce GHG emissions include:

- Increasing percentage of non-auto mode share
- Reducing VMT per capita
- Reducing Caltrans' internal operational (buildings, facilities, and fuel) GHG emissions

Funding and Technical Assistance Programs

In addition to developing plans and performance targets to reduce GHG emissions, Caltrans also administers several sustainable transportation planning grants. These grants encourage local and regional multimodal transportation, housing, and land use planning that furthers the region's RTP/SCS; contribute to the state's GHG reduction targets and advance transportation-related GHG emission reduction project types/strategies; and support other climate adaptation goals (e.g., Safeguarding California).

Caltrans Policy Directives and Other Initiatives

Caltrans Director's Policy 30 Climate Change (June 22, 2012) is intended to establish a Department policy that will ensure coordinated efforts to incorporate climate change into Departmental decisions and activities. *Caltrans Activities to Address Climate Change* (April 2013) provides a comprehensive overview of Caltrans' statewide activities to reduce GHG emissions resulting from agency operations.

Project-Level GHG Reduction Strategies

The following measures will also be implemented in the project to reduce GHG emissions and potential climate change impacts from the project.

- **PF-GHG–1**: Landscaping reduces surface warming and, through photosynthesis, decreases carbon dioxide (CO₂). The final design plans will provide landscaping where necessary within the corridor to provide aesthetic treatment, replacement planting, or mitigation planting for the project. The landscape planting would help offset project CO₂ emissions.
- **PF-GHG-2**: The final design plans will incorporate the use of energy-efficient lighting, such as light-emitting diode (LED) traffic signals. LED bulbs consume 10 percent of the electricity of traditional lights, which will also help reduce the project's CO₂ emissions.
- **PF-GHG–3**: During construction, the Construction Contractor will comply with Caltrans Standard Specification Provisions that restrict idling time for lane closure during construction to 10 minutes in each direction. In addition, the Construction Contractor must comply with Title 13, California Code of Regulations Section

2449(d)(3), which was adopted by the California Air Resources Board on June 15, 2008. That regulation restricts idling of construction vehicles to no longer than five consecutive minutes. Compliance with this regulation reduces harmful emissions from diesel-powered construction vehicles.

- **PF-GHG-4**: The project will incorporate Best Available Control Technologies (BACT) as approved by Caltrans for projects during final design/construction (2030- 2032) as applicable:
 - Use cement blended with the maximum feasible amount of flash or other materials (i.e., limestone) that reduce GHG emission from cement production.
 - Use lighter-colored pavement where feasible to increase albedo.
 - Use recycled water or grey water for fugitive dust control.
 - Employ energy- and fuel-efficient vehicles and equipment, zero- and/or nearzero emission technologies where available.
 - Encourage ride-sharing and carpooling for construction crews.
 - Use asphalt alternatives (i.e., rubberized hot-mix asphalt) to pave roadways.
 - Reduce construction waste and maximize the use of recycled materials (reduces consumption of raw materials, reduces landfill waste, and encourages cost savings).
 - Incorporate measures to reduce consumption of potable water.
 - Encourage improved fuel efficiency from construction equipment (examples provided below):
 - Maintain equipment in proper tune and working condition
 - Use the right size equipment for the job
 - Use equipment with new technologies. Already included in GHG 4.
 - Construction Environmental Training: Supplement existing training with information regarding methods to reduce GHG emissions related to construction.
 - Encourage the use of alternative bridge construction (ABC) (reduce construction windows, use of more precast elements that in turn reduce need for additional falsework, forms, bracing, etc.).
 - Maximize use of recycled materials (e.g., tire rubber).
 - Salvage large removed trees for lumber or similar on-site beneficial uses other than standard wood-chipping. (e.g., use in roadside landscape projects or green infrastructure components).
 - On-site recycling of existing project features is encouraged: (e.g., metal beam guard railing, light standards, sub-base granular material, or native material that meets Caltrans' specifications for incorporation into new work).
 - Lower the rolling resistance of highway surfaces as much as possible while still maintaining design and safety standards.

- Earthwork Balance: Reduce the need for transport of earthen materials by balancing cut and fill quantities.
- Cold in-place recycling: This pavement rehabilitation treatment is used on low traffic-volume, hot mix asphalt (HMA) pavements to extend the pavement service life and to recycle natural resources. The treatment also reduces emissions and energy use associated with processing and hauling these materials (https://www.dot.ny.gov/programs/climate-change/activities).

Adaptation

Reducing GHG emissions is only one part of an approach to addressing climate change. Caltrans must plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and their intensity, and in the frequency and intensity of wildfires. Flooding and erosion can damage or wash out roads; longer periods of intense heat can buckle pavement and railroad tracks; storm surges combined with a rising sea level can inundate highways. Wildfire can directly burn facilities and indirectly cause damage when rain falls on denuded slopes that landslide after a fire. Effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. Accordingly, Caltrans must consider these types of climate stressors in how highways are planned, designed, built, operated, and maintained.

Federal Efforts

Under NEPA assignment, Caltrans is obligated to comply with all applicable federal environmental laws and FHWA NEPA regulations, policies, and guidance.

The U.S. Global Change Research Program delivers a report to Congress and the president every 4 years, in accordance with the Global Change Research Act of 1990 (15 U.S.C. Chapter 56A Section 2921 et seq). The *Fourth National Climate Assessment*, published in 2018, presents the foundational science and the "human welfare, societal, and environmental elements of climate change and variability for 10 regions and 18 national topics, with particular attention paid to observed and projected risks, impacts, consideration of risk reduction, and implications under different mitigation pathways." Chapter 12, "Transportation," presents a key discussion of vulnerability assessments. It notes that "asset owners and operators have increasingly conducted more focused studies of particular assets that consider multiple climate hazards and scenarios in the context of asset-specific information, such as design lifetime."

U.S. DOT Policy Statement on Climate Adaptation in June 2011 committed the federal Department of Transportation to "integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of DOT in order to ensure that taxpayer resources are invested wisely, and that transportation infrastructure, services and operations remain effective in current and future climate conditions."⁸

To further the DOT Policy Statement, in December 15, 2014, FHWA issued order 5520 (Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events). This directive established FHWA policy to strive to identify the risks of climate change

⁸ <u>https://www.fhwa.dot.gov/environment/sustainability/resilience/policy_and_guidance/usdot.cfm</u>

and extreme weather events to current and planned transportation systems. The FHWA will work to integrate consideration of these risks into its planning, operations, policies, and programs in order to promote preparedness and resilience; safeguard federal investments; and ensure the safety, reliability, and sustainability of the nation's transportation systems.

FHWA has developed guidance and tools for transportation planning that fosters resilience to climate effects and sustainability at the federal, state, and local levels.

FHWA has developed guidance and tools for transportation planning that fosters resilience to climate effects and sustainability at the federal, state, and local levels (FHWA 2019).

State Efforts

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system. <u>California's Fourth Climate</u> <u>Change Assessment</u> (2018) is the state's latest effort to "translate the state of climate science into useful information for action" in a variety of sectors at both statewide and local scales. It adopts the following key terms used widely in climate change analysis and policy documents:

- *Adaptation* to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.
- *Adaptive capacity* is the "combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities."
- *Exposure* is the presence of people, infrastructure, natural systems, and economic, cultural, and social resources in areas that are subject to harm.
- *Resilience* is the "capacity of any entity—an individual, a community, an organization, or a natural system—to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience." Adaptation actions contribute to increasing resilience, which is a desired outcome or state of being.
- *Sensitivity* is the level to which a species, natural system, community, government, or other would be affected by changing climate conditions.
- *Vulnerability* is the "susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt." Vulnerability can increase because of physical (built and environmental), social, political, and/or economic factor(s). These factors include, but are not limited to: ethnicity, class, sexual orientation and identification, national origin, and income inequality. Vulnerability is often defined as the combination of sensitivity and adaptive capacity as affected by the level of exposure to changing climate.

Several key state policies have guided climate change adaptation efforts to date. Recent state publications produced in response to these policies draw on these definitions.

EO S-13-08, issued by then-governor Arnold Schwarzenegger in November 2008, focused on sea-level rise and resulted in the *California Climate Adaptation Strategy* (2009), updated in 2014 as *Safeguarding California: Reducing Climate Risk* (Safeguarding California Plan). The Safeguarding California Plan offers policy principles and recommendations and continues to be revised and augmented with sector-specific adaptation strategies, ongoing actions, and next steps for agencies.

EO S-13-08 also led to the publication of a series of sea-level rise assessment reports and associated guidance and policies. These reports formed the foundation of an interim *State of California Sea-Level Rise Interim Guidance Document* in 2010, with instructions for how state agencies could incorporate "sea-level rise projections into planning and decision making for projects in California" in a consistent way across agencies.

The guidance was revised and augmented in 2013. *Rising Seas in California – An Update on Sea-Level Rise Science* was published in 2017 and its updated projections of sea-level rise and new understanding of processes and potential impacts in California were incorporated into the *State of California Sea-Level Rise Guidance Update* in 2018.⁹

EO B-30-15, signed in April 2015, requires state agencies to factor climate change into all planning and investment decisions. This EO recognizes that effects of climate change other than sea-level rise also threaten California's infrastructure. At the direction of EO B-30-15, the Office of Planning and Research published *Planning and Investing for a Resilient California: A Guidebook for State Agencies* in 2017 to encourage a uniform and systematic approach. Representatives of Caltrans participated in the multi-agency, multidisciplinary technical advisory group that developed this guidance on how to integrate climate change into planning and investment.

AB 2800 (Quirk 2016) created the multidisciplinary Climate-Safe Infrastructure Working Group, which in 2018 released its report, *Paying it Forward: The Path Toward Climate-Safe Infrastructure in California*. The report provides guidance to agencies on how to address the challenges of assessing risk in the face of inherent uncertainties still posed by the best available science on climate change. It also examines how state agencies can use infrastructure planning, design, and implementation processes to address the observed and anticipated climate change impacts.

Caltrans Adaptation Efforts

Caltrans Vulnerability Assessments

Caltrans is conducting climate change vulnerability assessments to identify segments of the State Highway System vulnerable to climate change effects including precipitation, temperature, wildfire, storm surge, and sea-level rise. The approach to the vulnerability assessments was

⁹ <u>http://www.opc.ca.gov/updating-californias-sea-level-rise-guidance/</u>

tailored to the practices of a transportation agency, and involves the following concepts and actions:

- *Exposure* Identify Caltrans assets exposed to damage or reduced service life from expected future conditions.
- *Consequence* Determine what might occur to system assets in terms of loss of use or costs of repair.
- *Prioritization* Develop a method for making capital programming decisions to address identified risks, including considerations of system use and/or timing of expected exposure.

The climate change data in the assessments were developed in coordination with climate change scientists and experts at federal, state, and regional organizations at the forefront of climate science. The findings of the vulnerability assessments will guide analysis of at-risk assets and development of adaptation plans to reduce the likelihood of damage to the State Highway System, allowing Caltrans to both reduce the costs of storm damage and to provide and maintain transportation that meets the needs of all Californians.

3.2.4.2 Project Adaptation Analysis

Sea Level Rise Analysis

The proposed project is outside the coastal zone and not in an area subject to sea-level rise. Accordingly, direct impacts to transportation facilities due to projected sea-level rise are not expected.

Floodplains

Portions of the project limits traverse the Lower Santa Ana River Watershed, the Santiago Creek Watershed, and the San Diego Creek Watershed. Santiago Creek, an intermittent stream, is the only natural watercourse in the project study area, crossing SR 55 at PM 13.42 at the Santiago Creek Bridge. The project crossing is in a 100-year floodplain and FEMA Zones AE at this location (see Section 2.8). The project hydrology and floodplain analysis (Section 2.8) indicates the project would not change flood storage capacity or modify flood flows, and therefore would not increase the risk of flooding. The *Caltrans Climate Change Vulnerability Assessments* District 12 Draft Technical Report (December 2018) shows that SR 55 is in an area projected to experience a less than 5 percent increase in 100-year storm precipitation depth through 2085. During the design phase, detailed pavement hydrology and hydraulic analysis will be conducted to calculate flows and size drainage facilities in conformance with Caltrans design criteria.

Wildfire

The project segment is fully developed and not within or near a designated very high fire hazard severity zone. Therefore, the project would not exacerbate the effects of climate change related to wildfire.

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Chapter 4 Comments and Coordination

Early and continuing coordination with the general public and public agencies is an essential part of the environmental process. It helps planners determine the necessary scope of environmental documentation and the level of analysis required and to identify potential impacts and avoidance, minimization, and/or mitigation measures and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including Project Development Team (PDT) meetings, interagency coordination meetings, and consultation with interested parties. This chapter summarizes the results of the Caltrans efforts to fully identify, address, and resolve projectrelated issues through early and continuing coordination.

4.1 Notice of Initiation of Studies

On June 7, 2018, OCTA, in partnership with Caltrans, hosted a Public Information Meeting for the proposed SR 55 Improvement Project between I-5 and SR 91. The meeting was hosted from 6:00 to 8:00 p.m. at Grijalva Park Sports Center located at 368 North Prospect Avenue in the city of Orange. The purpose of the meeting was to inform the public about the proposed project, provide a forum to discuss the project, and educate participants on how to stay informed about the project. Public noticing for the Public Information Meeting occurred through multiple communication channels, including:

- An advertisement published in the Orange County Register and Excélsior newspapers
- Boosted posts posted to and paid for on Facebook (@SR55) and Twitter (@SR55Project)
- 15,551 postcards mailed to all occupants, owners, and contacts with addresses within a half-mile of the proposed project
- 10,000 flyers delivered to all addresses within a half-mile of the proposed project
- A project fact sheet and meeting information published on the dedicated project website (www.octa.net/SR55North)
- Email notifications sent to a database of stakeholders maintained by OCTA and to community members who subscribed for email updates through the project website

Approximately 85 people attended the meeting. Additionally, a "Facebook Live" session was also held which transmitted a live video feed to the project Facebook page. A summary of concerns from the meeting are provided below.

- Some respondents own property or homes near the project area, and they would like to know how they may be impacted by the project. One respondent was particularly concerned about the possibility of freeway encroachment on existing sound walls, trees, or housing.
- Some respondents expressed concerns about congestion, noise, and dust from construction phase impacting residents. A few respondents requested noise evaluations for Vista Royale Housing Tract near the SR 55/Lincoln Avenue interchange and adjacent to the SR 55 North to SR 22 West on-ramp.

• Multiple respondents suggested improvements relating to how to prioritize improvements, extending the existing toll/ HOV lane, and specific traffic signal settings that impact intersection congestion.

4.2 Interagency Consultation

The formulation of project alternatives and mitigation has been carried out through a cooperative dialogue among representatives of the following agencies or organizations:

- Orange County Transportation Authority (OCTA)
- City of Tustin
- City of Santa Ana
- City of Orange
- City of Anaheim
- Historical Groups
- California Department of Fish and Wildlife (CDFW)
- Native American Heritage Commission (NAHC)
- Regional Water Quality Control Board (RWQCB)
- State Historic Preservation Office (SHPO)
- Southern California Association of Governments Transportation Conformity Working Group (SCAG TCWG)
- State Water Resources Control Board (SWRCB)
- United States Army Corps of Engineers (USACE)
- United States Fish and Wildlife Service (USFWS)

The following sections summarize the efforts of both Caltrans and OCTA to fully identify, address and resolve project-related issues through early and continuing coordination.

4.2.1 Native American Heritage Coordination

The NAHC was contacted February 1, 2018, to request a search of the SLF and a list of Native American contacts with traditional or historical ties to the project area for consultation under AB 52. In a letter dated February 2, 2018, the NAHC reported that a search of the SLF was completed with negative results. The NAHC provided a list of Native American contacts who should be consulted regarding the project. Documentation on this coordination is provided in the *Historic Property Survey Report* (March 2019).

Letters requesting information about cultural resources in the project area were sent via certified first-class mail to all of the tribal contacts identified by the NAHC on March 14, 2018. Each letter notified the tribe of the proposed project, described the project components, and summarized the investigations being conducted to identify cultural resources within the project APE, including the results of the NAHC SLF search, record search, and cultural resources studies conducted within the APE. Maps of the project location and APE were included. Each letter invited the tribe to participate in consultation for the proposed project. Follow-up phone calls were made to each tribal contact upon confirmation of receipt of the letter. No response was received from 17 of the 19 contacted tribes. Responses were received from two of the tribes: the Viejas Band of Kumeyaay Indians and the Gabrieleno Band of Mission Indians – Kizh Nation.

Summary of coordination with these tribes is provided below. Summary of all consultation with the Native American representatives is summarized in Table 4.2-1. A copy of the NAHC and Native American correspondence is included in Attachment E of the HPSR.

4.2.1.1 Viejas Band of Kumeyaay Indians:

A letter dated March 21, 2018, was received from Ray Teran, Resource Manager, for the Viejas Band of Kumeyaay Indians. The letter states that the project site has little cultural significance or ties to the Tribe. The Tribe requests to be informed of any new developments such as inadvertent discoveries of cultural artifacts, cremation sites, or human remains. Cheryl Sinopoli of Caltrans replied by email on March 28, 2018, acknowledging receipt of the letter and the request to be informed of new discoveries.

4.2.1.2 Gabrieleno Band of Mission Indians – Kizh Nation:

A letter dated April 4, 2018, was received from Andrew Salas, Tribal Chairman of the Gabrieleno Band of Mission Indians – Kizh Nation. The letter states that project is within a sensitive area and may cause a substantial adverse change in the significance of the Tribe's cultural resources; the Tribe requests consultation for the project. Cheryl Sinopoli of Caltrans replied to Chairman Salas by email on April 5, 2018, requesting a date and time to meet to discuss potential concerns. Ms. Sinopoli also provided a copy of the project description, the SLF and records search results, and project location maps.

On April 23, 2018, Chairman Salas responded regarding a different project. No comments about the SR 55 Improvements Project were provided. On April 27, 2018, Ms. Sinopoli attended a field meeting with Chairman Salas for a separate project. The SR 55 Improvements Project was briefly discussed. Chairman Salas indicated that the Lincoln Avenue and I-5/SR 22 locations had concerns for the Tribe and he would check the Tribe's records regarding the Katella Avenue location. He also stated that he would provide additional information. On May 1, 2018, Ms. Sinopoli sent an email to Chairman Salas requesting the additional information mentioned during the field meeting and provided maps of the project APE.

On May 16, 2018, Chairman Salas sent an email to Ms. Sinopoli regarding a resource near the Yorba Cemetery. Ms. Sinopoli responded via email on June 13, 2018, to confirm that the Yorba Cemetery is 3.4 miles away from any proposed ground disturbance associated with the proposed project and that the potential to encounter buried resources within the APE was being assessed. Chairman Salas replied on June 13, 2018, and confirmed that the resource in question is adjacent to, but not within the Yorba Cemetery and confirmed that the resource is about 3 miles away from SR 55. Ms. Sinopoli replied on June 14, 2018, thanking Chairman Salas for the clarification.

On January 15, 2019, Ms. Sinopoli sent an email to Chairman Salas summarizing the results of the archaeological sensitivity analysis and review of as-built drawings. Ms. Sinopoli requested that Chairman Salas contact her if he had any comments or wanted to discuss the project further. No further response has been received from Chairman Salas to date.

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Tribal Group	Date Letter Sent to Tribes via Certified Mail	Date Tribal Response to Letter Received	Date and Results of Follow-up Telephone Calls and/or Emails
Campo Band of Mission Indians Ralph Goff, Chairperson	3/14/2018	4/16/2018. No response received.	3/29/2018. A follow up email was sent to Mr. Goff. 4/6/2018. An attempt to reach Mr. Goff by phone was unsuccessful. No response to voicemail.
Ewilaapaayp Tribal Office Michael Garcia, Vice Chairperson	3/14/2018	4/16/2018. No response received.	3/29/2018. A follow up email was sent to Mr. Garcia. Email bounced back. 3/29/2018. Resent using this email address: <u>wmicklin@leaningrock.net</u> . 4/6/2018. An attempt to reach Mr. Garcia by phone was unsuccessful. No answer.
Ewilaapaayp Tribal Office Robert Pinto, Chairperson	3/14/2018	4/16/2018. No response received.	3/29/2018. No email address for Mr. Pinto. 3/29/2018. Sent using this email address: wmicklin@leaningrock.net as/ Ewilaapaayp website. 4/6/2018. A second follow up email was sent to Mr. Pinto.
Gabrieleno Band of Mission Indians-Kizh Nation Andrew Salas, Chairperson	3/14/2018	4/4/2018. Chairman Andrew Salas responded indicating that the SR 55 project area is within the Gabrieleno Band of Mission Indians-Kizh Nation's ancestral tribal territory and within a sensitive area that may cause a substantial adverse change in the significance of their tribal cultural resources. To avoid adverse effects on any resources, Chairman Salas requested that his tribe be consulted about the SR 55 project.	 3/29/2018. A follow up email was sent to Mr. Mr. Salas 4/4/2018. Response letter received with request from the tribe to consult. 4/5/2018. Email from Cheryl Sinopoli (Caltrans) to Chairman Salas providing additional information about the project and requesting a meeting to discuss any potential concerns. 4/23/2018: Follow-up email from Cheryl Sinopoli (Caltrans) to Chairman Salas requesting review of the SR 55 project and attaching the project location maps for reference. 4/23/2018: Response from Chairman Salas to Cheryl Sinopoli (Caltrans) describing the sensitivity of the project area and providing an Internet hyperlink to site information. 4/23/2018: Response from Cheryl Sinopoli (Caltrans) to Chairman Salas acknowledging above email, asking for clarifying information on Chairman Salas email as it seemed to be about a different site, and requesting that Chairman Salas please respond to the correct project location SR 55 EA 0K7200 project. 4/27/2018: Field trip to the project area with Chairman Salas, Charles Baker, Matthew Teutimez. 5/1/2018: Follow-up email from Cheryl Sinopoli (Caltrans) to Chairman Salas regarding the field visit on April 27, 2018, providing additional maps, and requesting information about any project area concerns. 5/16/ 2018: Chairman Salas sent an email to Ms. Sinopoli regarding a resource near the Yorba Cemetery. 6/13/18: Ms. Sinopoli responded via email to confirm that the Yorba Cemetery is 3.4 miles away from the SR 55 project. 6/13/18: Chairman Salas replied and confirmed that the resource in question is about 3 miles away from the SR 55 project. Ms.Sinopoli replied on 6/14/18. Ms. Sinopoli replied thanking Chairman Salas for the clarification. 1/15/2019: Ms. Sinopoli sent an email to Chairman Salas summarizing the results of the archaeological sensitivity analysis and review of as-built drawings, and requested that Chairman Salas.
Gabrieleno/Tongva San Gabriel Band of Mission Indians Anthony Morales, Chairperson	3/14/2018	4/16/2018. No response received.	3/29/2018. A follow up email was sent to Mr. Morales. 4/6/2018. A second follow up email was sent to Mr. Morales.

Table 4.2-1: Summary of Native American Consultation

Tribal Group	Date Letter Sent to Tribes via Certified Mail	Date Tribal Response to Letter Received	Date and Results of Follow-up Telephone Calls and/or Emails
Gabrieleno/Tongva Nation Sandonne Goad, Chairperson	3/14/2018	4/16/2918. No response received.	3/29/2018. A follow up email was sent to Ms. Goad. 4/6/2018. A second follow up email was sent to Ms. Goad.
Gabrieleno Tongva Indians of California Tribal Council Robert Dorame, Chairperson	3/14/2018	4/16/2918. No response received.	3/29/2018. A follow up email was sent to Mr. Dorame. 4/6/2018. A second follow up email was sent to Mr. Dorame.
Gabrieleno-Tongva Tribe Charles Alvarez	3/14/2018	4/16/2918. No response received.	3/29/2018. A follow up email was sent to Mr. Alvarez. 4/6/2018. A second follow up email was sent to Mr. Alvarez.
Jamul Indian Village Erica Pinto, Chairperson	3/14/2018	4/16/2918. No response received.	3/29/2018. No email address for Ms. Pinto.3/29/2018. Sent using this email address: info@jamulindianvillage.com4/6/2018. An attempt to reach Ms. Pinto by phone was unsuccessful. No answer.
Juaneno Band of Mission Indians Sonia Johnston, Chairperson	3/14/2018	4/16/2918. No response received.	 3/29/2018. A follow up email was sent to Ms. Johnston. 3/30/2018. Hardcopy sent by certified mail not picked up at USPO by tribe; digital copy sent on this date to ensure access to the information. 4/6/2018. A third follow up email was sent to Ms. Johnston.
Juaneno Band of Mission Indians Acjachemen Nation – Belardes Matias Belardes, Chairperson	3/14/2018	4/16/2918. No response received.	 3/29/2018. No email address for Mr. Belardes. 3/29/2018. Sent using this email address: webmaster@juaneno.com as/Acjachemen Nation website. 3/30/2018. Hardcopy sent by certified mail not picked up at USPO by tribe; digital copy sent on this date to ensure access to the information. 4/6/2018. A third follow up email was sent to Mr. Belardes.
Juaneno Band of Mission Indians Acjachemen Nation – Romero Teresa Romero, Chairperson	3/14/2018	4/16/2018. No response received.	3/29/2018. A follow up email was sent to Ms. Romero. 4/6/2018. A second follow up email was sent to Ms. Romero.
La Posta Band of Mission Indians Gwendolyn Parada, Chairperson	3/14/2018	4/16/2018. No response received.	3/29/2018. A follow up email was sent to Ms. Parada. 4/6/2018. A second follow up email was sent to Ms. Parada.
La Posta Band of Mission Indians Javaughn Miller, Tribal Administrator	3/14/2018	4/16/2018. No response received.	3/29/2018. A follow up email was sent to Mr. Miller. 4/6/2018. A second follow up email was sent to Mr. Miller.
Manzanita Band of Kumeyaay Nation Angela Elliott Santos, Chairperson	3/14/2018	4/16/2018. No response received.	 3/29/2018. No email address for Ms. Santos. 3/29/2018. No valid email address; called no answer. 4/6/2018. An attempt to reach Ms. Santos by phone was unsuccessful. No answer.

Tribal Group	Date Letter Sent to Tribes via Certified Mail	Date Tribal Response to Letter Received	Date and Results of Follow-up Telephone Calls and/or Emails
San Fernando Band of Mission Indians John Valenzuela, Chairperson	3/14/2018	4/16/2018. No response received.	 3/29/2018. A follow up email was sent to Mr. Valenzuela. 3/30/2018. Original hardcopy sent by certified mail not picked up at USPO by tribe; digital copy sent on this date to ensure access to the information. 4/6/2018. A third follow up email was sent to Mr. Valenzuela.
San Pasqual Band of Mission Indians Allen E. Lawson, Chairperson	3/14/2018	4/16/2018. No response received.	3/29/2018. A follow up email was sent to Mr. Lawson. 4/6/2018. A second follow up email was sent to Mr. Lawson.
Sycuan Band of the Kumeyaay Nation Cody J. Martinez, Chairperson	3/14/2018	4/16/2018. No response received.	3/29/2018. A follow up email was sent to Mr. Martinez. Email bounced back.3/29/2018. No valid email address. Called no answer.4/6/2018. An attempt to reach Mr. Martinez by phone was unsuccessful. No response to voicemail.
Viejas Band of Kumeyaay Indians Robert Welch, Chairperson	3/14/2018	3/21/2018: Mr. Ray Teran, Resource Manager responded indicating that the Viejas Band of Kumeyaay Indians had reviewed the proposed project and determined that the project site has little cultural significance or ties to the Viejas. The Viejas recommended that tribes closest to the cultural resources [project site] be contacted. The Viejas also requested to be informed of any new developments, including inadvertent discovery of cultural artifacts, cremation sites, or human remains in order for them to reevaluate consultation participation.	3/21/2917. Consultation complete.

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4.2.2 Local Governments

Letters requesting information on cultural resources were sent to relevant local governments via United States Postal Service (USPS) on January 26, 2018. Two rounds of follow-up phone calls and/or emails were placed on June 13, 2018, and July 18, 2018.

Local governments contacted were:

- Planning & Zoning Department, 200 Anaheim Boulevard, Anaheim
- Planning and Building Agency, 20 Civic Center Plaza, Santa Ana
- Planning Division, 300 East Chapman Avenue, Orange
- Planning and Zoning Division, 300 Centennial Way, Tustin
- Orange County Planning Department, 300 North Flower Street, Santa Ana

The City of Orange provided maps of potential cultural and pre-historic archaeological resources and information on the town of Olive on January 30, 2018 (see Attachment F of the HPSR).

4.2.3 Local Historical Society/Historic Preservation Groups

Letters requesting information on cultural resources were sent to relevant local historical society/historic preservation groups via USPS on January 26, 2018. Two rounds of follow-up phone calls and/or emails were placed on June 13, 2018, and July 18, 2018. Organizations contacted included:

- Anaheim Central Public Library, 500 West Broadway, Anaheim
- Anaheim Historical Society, P.O. Box 927, Anaheim
- Santa Ana Public Library, 26 Civic Center Plaza, Santa Ana
- Santa Ana Historical Preservation Society, 120 West Civic Center Drive, Santa Ana
- Orange Public Library, 407 East Chapman Avenue, Orange
- Orange Community Historical Society, P.O. Box 5484, Orange
- Orange County Public Library (Tustin branch), 345 East Main Street, Tustin
- Tustin Area Historical Society and Museum, 395 El Camino Real, Tustin
- Orange County Historical Society, P.O. Box 10984, Santa Ana

The Anaheim Historical Society provided information on three listed historical resources and eight potential historical resources near the APE. Voicemails were left for most agencies, although representatives at the City of Tustin Planning and Zoning Division, Tustin Branch Library, City of Santa Ana Planning and Building Agency, Santa Ana Public Library, and Anaheim Central Public Library did not have any comments or input regarding cultural resources. No known cultural resources located within the APE were identified as a result of this public participation process (see Attachment F of the HSPR).

4.2.4 State Historic Preservation Officer

As assigned by the FHWA, Caltrans has determined that properties within the APE evaluated as a result of this project are **eligible** for inclusion in the NRHP and/or as CHLs. Under Section 106 PA Stipulation VIII.C.6 (Caltrans 2015a) and as applicable PRC 5024 MOU Stipulation

VIII.C.6, Caltrans requests SHPO's concurrence in this determination. Pursuant to PRC 5024(d), Caltrans also requests that SHPO add these resources to the Master List of Historical Resources. Caltrans, pursuant to Section 106 PA Stipulation IX.A and as applicable PRC 5024 MOU Stipulation IX.A.2, has determined a Finding of No Historic Properties Affected is appropriate for this undertaking because no historic properties within the APE will be affected. Under the Section 106 PA Stipulation VIII.C, Caltrans requested and SHPO concurred on this eligibility determination that 14841 Yorba Street in Tustin, California, is eligible for the NRHP under Criterion C but they do not have sufficient contextual information at this time to comment on the property's eligibility under Criterion B; and that 14891 Yorba Street in Tustin is eligible for the NRHP under Comment on the property's eligibility under Criterion A. The following three properties, 730, 741, and 750 West First Street in Tustin, are not eligible for the NRHP. SHPO concurrence was received on April 30, 2019.



DEPARTMENT OF PARKS AND RECREATION OFFICE OF HISTORIC PRESERVATION Julianne Polanco, State Historic Preservation Officer Lisa Ann L. Mangat, Director 1725 23rd Street, Suite 100, Sacramento, CA 95816-7100 Telephone: (916) 445-7000 FAX: (916) 445-7053 calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

April 30, 2019

VIA EMAIL

In reply refer to: FHWA_2019_0404_001

Mr. Charles Baker, Environmental Analysis – Specialist Branch Chief Caltrans District 12 1750 East Fourth Street, Suite 100 Santa Ana, CA 92705

Subject: Determination of Eligibility for the Proposed SR-55 Improvement Project between I-5 and SR-91, Orange County, CA

Dear Mr. Baker:

Caltrans is initiating consultation for the above project in accordance with the January 1, 2014 First Amended Programmatic Agreement Among the Federal Highway Administration (FHWA), the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California (PA). As part of your documentation, Caltrans submitted a Historic Property Survey Report (HPSR), Historic Resources Evaluation Report (HRER), and Archaeological Survey Report (ASR) for the proposed project.

Caltrans, in cooperation with the Orange County Transportation Authority, proposes to improve SR 55 from just north of I-5 to just south of SR 91 within the Cities of Anaheim, Santa Ana, Orange and Tustin. A full description of the project and area of potential effect (APE) is located on pages 1-2 of the HPSR.

Pursuant to Stipulation VIII.C.6 of the PA, Caltrans determined that the following properties are not eligible for the National Register of Historic Places (NRHP):

- 730 W 1st Street, Tustin, CA
- 741 W 1st Street, Tustin, CA
- 750 W 1st Street, Tustin, CA

Pursuant to Stipulation VIII.C.6 of the PA Caltrans also found that following properties are eligible for the NRHP for the reasons stated below:

 14841 Yorba Street, Tustin, CA – Caltrans found this property eligible under Criteria B and C. Under Criterion B the property is significant for its association with early rancher Oakes B. Newcom and his wife Daisy with a period of

Colonial Revival style in Tustin. significance of 1924. Under Criterion C, the property is a notable example of the

with the citrus industry in Orange County. Under Criterion C, the property is a significance is 1930. notable example of the Spanish Colonial Revival style in Tustin. The period of Criterion A and C. Under Criterion A the property is significant for its association 14891 Yorba Street, Tustin, CA – Caltrans found this property eligible under

Based on review of the submitted documentation, I have the following comments:

- NRHP. I concur that 730, 741 and 750 W 1st Street in Tustin are not eligible for the
- C. I do not have sufficient contextual information at this time to comment on the I concur that 14841 Yorba Street in Tustin is eligible for the NRHP under Criterion property's eligibility under Criterion B.
- property's eligibility under Criterion A. I concur that 14891 Yorba Street in Tustin is eligible for the NRHP under Criterion C. I do not have sufficient contextual information at this time to comment on the

alicia.perez@parks.ca.gov mail at natalie.lindquist@parks.ca.gov or Alicia Perez at (916) 445-7020 with e-mail at If you have any questions, please contact Natalie Lindquist at (916) 445-7014 with e-

Sincerely,

Julianne Polanco State Historic Preservation Officer

4-12

4.2.5 Transportation Conformity Working Group

The proposed project was submitted to stakeholders at the TCWG meeting on May 22, 2018, pursuant to the Interagency Consultation requirement of 40 CFR 93.105 (c)(1)(i). U.S. EPA, FHWA, Caltrans, California ARB, SCAQMD, and other interagency consultation participants concurred that the project is not a POAQC under 40 CFR 93.123(b)(1) regarding POAQC determination. The project is not considered a POAQC because it does not meet the definition as defined in U.S. EPA's Transportation Conformity Guidance. TCWG meeting notes are provided following this section.

The project is listed in the 2016–2040 financially constrained RTP/SCS which was found by the SCAG to conform on April 7, 2016; and FHWA and FTA made a regional conformity determination finding on June 2, 2016. The project is also included in the SCAG financially constrained 2019 FTIP, page 2 of the Orange County Project Listing for State Highways. The SCAG 2019 FTIP was determined to conform by FHWA and FTA on December 17, 2018. The design concept and scope of the project is consistent with the project description in the 2016–2040 RTP/SCS, 2019 FTIP (SCAG 2018), and the open to traffic assumptions of the SCAG regional emissions analysis.

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TRANSPORTATION CONFORMITY WORKING GROUP of the SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

May 22, 2018 Minutes

The following minutes are a summary of the meeting of the transportation conformity working group. A digital recording of the actual meeting is available for listening in SCAG's office.

The Meeting of the Transportation Conformity Working Group was held at the SCAG office in Los Angeles.

Attendees

In Attendance:

Huddleston, Lori - Metro Morris, Michael - FHWA

SCAG:

Asuncion, John Luo, Rongsheng Ng, Emily

Via Teleconference:

Behtash, Arman - Caltrans District 12 Cacatian, Ben - VCAPCD Kalandiyur, Nesamani - ARB Kulkarni, Anup - OCTA Lau, Charles - Caltrans District 7 Lugaro, Julie - Caltrans District 12 Masters, Martha - RCTC Mortenson, Marilee - Caltrans Headquarters O'Connor, Karina - EPA Region 9 Sanchez, Lucas - Caltrans Headquarters Sheehy, Erin - OCTA Sherwood, Arnold - UCB Silverman, Sam - Terry A. Hayes Associates Sun, Lijin - SCAQMD Vaughn, Joseph - FHWA Walecka, Carla - TCA Walsh, Jason - Jacobs Yoon, Andrew - Caltrans District 7

1.0 Call to Order and Self-Introduction

Lori Huddleston, TCWG Chair, called the meeting to order at 10:05 am.

2.0 Public Comment Period

None.

3.0 Consent Calendar

March 27, 2018 TCWG Meeting Minutes The meeting minutes were approved.

April 24, 2018 TCWG Meeting Minutes

The meeting minutes were deferred to the next TCWG meeting.

4.0 Information Items

4.1 Review of PM Hot Spot Interagency Review Form

1. ORA2121002 (FTIP Project ID: ORA131301)

It was determined that this is not a POAQC.

At the request of Carla Walecka, TCA, below is a summary of next steps including rationales that the project needs to follow in order to receive final project-level conformity determination and NEPA approval based on TCWG discussion at the meeting and information provided by Lucas Sanchez, Caltrans Headquarters, after the meeting:

- PM hot spot interagency review is only one component of project-level conformity requirements. A non-exempt project cannot have final NEPA approval (CE, FONSI, ROD) until the project appears in both conforming TIP and RTP. The project is included in SCAG's 2016 RTP/SCS and 2017 FTIP but as an environmental and engineering project only. Some phase of work beyond environmental document must be programmed in TIP before NEPA document can be finalized, consistent with delivery (open to traffic) in RTP conformity analysis period where it's currently assumed. For projects that have long development periods, TIP may include only right of way and design work, with construction to come later (TIPs usually only include next 4-5 years of work), but work shown must be consistent with eventually delivering the project "on time" per conformity analysis period in which it's to be open. FHWA will not sign a conformity determination for a Section 327 project unless that kind of TIP and RTP listing exists, and without it Caltrans cannot sign a final NEPA action. Therefore, Caltrans District 12 staff will work with OCTA staff to properly program the project in the conforming TIP so that project schedule is consistent with programming.
- If three years would elapse since most recent major step to advance the project, projectlevel conformity will need to be re-determined for the project. According to EPA's Transportation Conformity Regulations, major steps include "NEPA process completion; start of final design; acquisition of a significant portion of the right-of-way; and, construction (including Federal approval of plans, specifications and estimates)." Projectlevel conformity also must be re-determined for any FHWA/FTA project upon a significant change in project's design concept and scope, or initiation of a supplemental environmental document for air quality purposes. As part of the project-level conformity

re-determination, the project would need to be brought back to TCWG again for interagency review to re-affirm that it remains aPOAQC.

• A conformity determination by FHWA and eventual NEPA approval by Caltrans is required for the project to move forward towards implementation.

2. LALS04

It was determined that this is not a POAQC.

4.2 OCTA TCM Substitution

Rongsheng Luo, SCAG, reported the following:

- SCAG staff had reviewed OCTA's request to substitute SR-241/91 Express Lanes Connector committed TCM project (FTIP ID: ORA111207) with three traffic signal synchronization projects in Orange County, and concurred that the proposed substitution meets all requirements.
- SCAG staff had subsequently prepared and released a Draft OCTA TCM Substitution Report for a 30-day public review starting on April 30, 2018. After conclusion of public review, all public comments would be incorporated into final TCM substitution analysis as appropriate.
- Final TCM substitution analysis was tentatively scheduled to be presented to SCAG's Energy and Environment Committee in July 2018 for recommendation to SCAG's Regional Council for adoption.
- Upon adoption by Regional Council, final TCM substitution analysis would be submitted to ARB and U.S. EPA for concurrence.
- Adoption by Regional Council and concurrence from ARB and U.S. EPA would rescind original TCM project and new committed TCM measures would become effective.

In response to a questions, Rongsheng Luo, SCAG, stated that ARB and U.S. EPA review usually takes about one to three months.

4.3 FTIP Update

John Asuncion, SCAG, reported the following:

- 2019 FTIP was on schedule for public release by SCAG's Transportation Committee on July 5, 2018, adoption by SCAG's Regional Council in September, state approval in November, and federal approval in mid-December 2018.
- 2017 FTIP Amendments through #17-18 had received all necessary approvals.
- 2017 FTIP Amendment #17-19 was under review for federal approval.
- 2017 FTIP Administrative Modification #17-20 was anticipated to be approved by May 25, 2018.

4.4 RTP Update

John Asuncion, SCAG, reported the following on behalf of Daniel Tran, SCAG:

- SCAG staff was developing Draft 2016 RTP/SCS Amendment #3, following 2019 FTIP schedule.
- SCAG staff would present an overview of 2020 RTP/SCS at a joint meeting of SCAG Policy Committees on June 7, 2018 to officially kick off its development process.

4.5 EPA Update

Karina O'Connor, EPA Region 9, reported the following:

- Mike Stoker, a former County Supervisor of Santa Barbara County in Southern California, is the new Regional Administrator for EPA Region 9.
- Federal Register Notice of final area designations for 2015 Ozone NAAQS was signed on April 30, 2018 and would be published soon.
- EPA did not yet have guidance on implementation of 1997 ozone standards in response to U.S. Court of Appeals for the District of Columbia Circuit's recent decision striking down portions of EPA's 2008 Ozone NAAQS SIP Requirements Rule. It did not seem that the Court ruling would impact any areas in SCAG region.

4.6 ARB Update

Nesamani Kalandiyur, ARB, reported the following:

- ARB Board was scheduled to consider adoption of Imperial County PM_{2.5} SIP for 2012 Annual PM_{2.5} NAAQS on May 25, 2018.
- Transportation conformity budgets in the Imperial County PM_{2.5} SIP had been developed collaboratively among Imperial County Air District, ARB, and SCAG and also in consultation with U.S. EPA staff. The budgets were developed with SCAG's travel activity data and EMFAC2014 covering on-road mobile sources for calendar years 2019 and 2022.
- EMFAC2017 had been updated and released early this year and also underwent a minor revision in March 2018. EMFAC2017 was planned to be submitted to

U.S. EPA in next few weeks. EMFAC web database also had been updated for generating EMFAC2017 results with default travel activity data.

4.7 Air Districts Update

Ben Cacatian, VCAPCD, reported that VCAPCD staff would meet with U.S. EPA staff soon to start discussing aspects of Ventura County 2016 Ozone SIP submittal for 2008 ozone NAAQS.

5.0 Information Sharing

Lijin Sun, SCAQMD, announced that she would be on an extended leave from June 15 through end of 2018. A newly hired SCAQMD staff would participate in TCWG meetings for remainder of 2018.

Rongsheng Luo, SCAG, announced and welcomed new SCAG intern Emily Ng and returning intern Amina Karwa who would assist in future TCWG meetings.

6.0 Adjournment

The meeting was adjourned at 10:45 am. The next Transportation Conformity Working Group meeting will be held on Tuesday, June 26, 2018 at the SCAG main office in downtown Los Angeles.

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4.2.6 United States Fish and Wildlife Service

An official species list was requested from the USFWS on February 13, 2020. The species list provided information about the threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur in the vicinity of a proposed project. The species list provided by USFWS follows this section.

4.2.7 National Marine Fisheries/National Oceanic and Atmospheric Administration

An official species list was requested from the NMFS on September 5, 2019. The species list provided information about the threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur in the vicinity of a proposed project. The species list provided by NFMS follows this section.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE Carlsbad Fish And Wildlife Office 2177 Salk Avenue - Suite 250 Carlsbad, CA 92008-7385 Phone: (760) 431-9440 Fax: (760) 431-5901 http://www.fws.gov/carlsbad/



In Reply Refer To: Consultation Code: 08ECAR00-2020-SLI-0594 Event Code: 08ECAR00-2020-E-01417 Project Name: SR-55 Improvement Project February 13, 2020

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

Event Code: 08ECAR00-2020-E-01417

2

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/ eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

Official Species List

Event Code: 08ECAR00-2020-E-01417

1

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office 2177 Salk Avenue - Suite 250 Carlsbad, CA 92008-7385 (760) 431-9440

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Event Code: 08ECAR00-2020-E-01417

2

Project Summary

Consultation Code:	08ECAR00-2020-SLI-0594
Event Code:	08ECAR00-2020-E-01417
Project Name:	SR-55 Improvement Project
Project Type:	BRIDGE CONSTRUCTION / MAINTENANCE
Project Description:	The proposed Project extends along SR-55 from Postmile (PM) 10.4 to PM 17.9, with the total length of the Project approximately 7.5 miles, within Orange County, California, located on the Tustin and Orange USGS 7.5' quadrangle maps. The proposed Project adds general purpose and auxiliary lanes in each direction at strategic locations along SR-55 between just north of the I-5/SR-55 interchange and just south of the SR-55/SR-91 interchange. Reconstruction of bridge structures, retaining walls and sound barriers would be required. Additional freeway drainage inlets may be required, and water quality best management practices (BMPs) would be incorporated. The proposed Project would not require any new right-of-way (ROW) or temporary construction easements

Project Location:

Approximate location of the project can be viewed in Google Maps: <u>https://www.google.com/maps/place/33.79097100391857N117.83133085665114W</u>



(TCE). Anticipated construction is from June 2032 through June 2035.

Counties: Orange, CA

Event Code: 08ECAR00-2020-E-01417

3

Endangered Species Act Species

There is a total of 10 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Pacific Pocket Mouse Perognathus longimembris pacificus	Endangered
No critical habitat has been designated for this species.	1 · · · · · · · · · · · · · · · · · · ·
Species profile: https://ecos.fws.gov/ecp/species/8080	

Event Code: 08ECAR00-2020-E-01417

4

Birds

02/13/2020

NAME	STATUS
California Least Tern Sterna antillarum browni No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/8104</u>	Endangered
Coastal California Gnatcatcher <i>Polioptila californica californica</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: <u>https://ecos.fws.gov/ecp/species/8178</u>	Threatened
Least Bell's Vireo Vireo bellii pusillus There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: <u>https://ecos.fws.gov/ecp/species/5945</u>	Endangered
Light-footed Clapper Rail <i>Rallus longirostris levipes</i> No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/6035</u>	Endangered
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: <u>https://ecos.fws.gov/ecp/species/6749</u>	Endangered
Western Snowy Plover <i>Charadrius nivosus nivosus</i> Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: <u>https://ecos.fws.gov/ecp/species/8035</u>	Threatened

Fishes

NAME	STATUS
Santa Ana Sucker Catostomus santaanae	Threatened
Population: 3 CA river basins	
There is final critical habitat for this species. Your location is outside the critical habitat.	
Species profile: https://ecos.fws.gov/ecp/species/3785	

Flowering Plants

NAME	STATUS
Big-leaved Crownbeard Verbesina dissita No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/8049</u>	Threatened
Laguna Beach Liveforever <i>Dudleya stolonifera</i> No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/7919</u>	Threatened

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Event Code: 08ECAR00-2020-E-01417

5

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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From: Wilkinson, Jessica
Sent: Thursday, September 05, 2019 15:24
To: 'nmfswcrca.specieslist@noaa.gov' <nmfswcrca.specieslist@noaa.gov>
Subject: California Dept of Transportation District 12; State Route 55 Improvement Project

To whom it may concern:

I am requesting concurrence on our search results for the proposed State Route 55 Improvement Project between Interstate 5 and State Route 91.

I will be the point-of-contact on behalf of Caltrans District 12 and here's my contact information:

Jessica Wilkinson, Jacobs Engineering Jessica.Wilkinson@jacobs.com Mobile Phone: (562) 884-6514 Address: 2600 Michelson Drive, Suite 500, Irvine, California 92612

Search Results:

Quad Name: Orange Quad Number: 33117-G7

ESA Anadromous Fish

SONCC Coho ESU (T) -CCC Coho ESU (E) -CC Chinook Salmon ESU (T) -CVSR Chinook Salmon ESU (T) -SRWR Chinook Salmon ESU (E) -NC Steelhead DPS (T) -CCC Steelhead DPS (T) -SCCC Steelhead DPS (T) -SC Steelhead DPS (E) - X CCV Steelhead DPS (T) -Eulachon (T) -SDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -CCC Coho Critical Habitat -CC Chinook Salmon Critical Habitat -CVSR Chinook Salmon Critical Habitat -SRWR Chinook Salmon Critical Habitat -NC Steelhead Critical Habitat -CCC Steelhead Critical Habitat -SCCC Steelhead Critical Habitat -SC Steelhead Critical Habitat -CCV Steelhead Critical Habitat -Eulachon Critical Habitat -SDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -Olive Ridley Sea Turtle (T/E) -Leatherback Sea Turtle (E) -North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -Fin Whale (E) -Humpback Whale (E) -Southern Resident Killer Whale (E) -North Pacific Right Whale (E) -Sei Whale (E) -Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -Chinook Salmon EFH -Groundfish EFH -Coastal Pelagics EFH -Highly Migratory Species EFH -

MMPA Species

(See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans -MMPA Pinnipeds - Quad Name: Tustin Quad Number: 33117-F7

ESA Anadromous Fish

SONCC Coho ESU (T) -CCC Coho ESU (E) -CC Chinook Salmon ESU (T) -CVSR Chinook Salmon ESU (T) -SRWR Chinook Salmon ESU (E) -NC Steelhead DPS (T) -CCC Steelhead DPS (T) -SCCC Steelhead DPS (T) -SC Steelhead DPS (E) - X CCV Steelhead DPS (T) -Eulachon (T) sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -CCC Coho Critical Habitat -CC Chinook Salmon Critical Habitat -CVSR Chinook Salmon Critical Habitat -SRWR Chinook Salmon Critical Habitat -NC Steelhead Critical Habitat -CCC Steelhead Critical Habitat -SCCC Steelhead Critical Habitat -SC Steelhead Critical Habitat -CCV Steelhead Critical Habitat -Eulachon Critical Habitat -SDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -Olive Ridley Sea Turtle (T/E) -Leatherback Sea Turtle (E) -North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -Fin Whale (E) -Humpback Whale (E) -Southern Resident Killer Whale (E) -North Pacific Right Whale (E) -Sei Whale (E) -Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -Chinook Salmon EFH -Groundfish EFH -Coastal Pelagics EFH -Highly Migratory Species EFH -

MMPA Species

(See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans -MMPA Pinnipeds -

Thank you!

Jessica C. Wilkinson | JACOBS | Senior Environmental Planner | +1 (949) 404-2104 | mob.+1 (562) 884-6514 | Jessica.Wilkinson@Jacobs.com | www.jacobs.com

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4.2.8 Noise Barrier Survey

During the preparation of the Noise Study Report for the Draft IS/EA, a 34-foot-long barrier along the State right-of-way on the southbound side of SR 55 was analyzed to shield Receptor R-53. Noise Barrier No. 1.1 was proposed as a new barrier and was evaluated from 6 feet to 22 feet high in 2-foot increments. On November 19, 2019, a survey letter was sent to the property owner of the location that would benefit from the proposed noise barrier. There was no response or survey returned at that time. A second survey letter was sent to the same property owner on November 1, 2019. During the noise barrier survey process, one response was received for Noise Barrier 1.1. Based on the result of the survey, the benefitted receptor does not support inclusion of the noise barrier. As a result, Caltrans does not intend to incorporate Noise Barrier No. 1.1 as part of the project.

Following are copies of the letter to the property from Caltrans and the signed noise barrier survey.

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STATE OF CALIFORNIA-BUSINESS, TRANSPORTATION AND HOUSING AGENCY

EDMUND G. BROWN, JR, Governor

DEPARTMENT OF TRANSPORTATION DISTRICT 12 1750 EAST 4TH STREET SUITE 100 SANTA ANA, CA 92705 PHONE (657) 328-6534



Making Conservation A California Way of Life

Sent Via Certified Mail

November 1, 2019

Mr. Donald Tarbell and/or Tarbell Plaza Partnership PO Box 43-B Balboa Island, CA 92662

Dear Mr. Tarbell and/or Tarbell Plaza Partnership:

The California Department of Transportation (Caltrans), in cooperation with the Orange County Transportation Authority (OCTA) and the Cities of Tustin, Santa Ana, and Anaheim, proposes improvements to the State Route 55 (SR 55). The proposed project adds general purpose and auxiliary lanes in each direction at strategic locations along SR 55 between north of Interstate 5 (I-5)/SR 55 interchange (PM 10.4) and south of SR 55/SR 91 interchange (PM R17.9).

You have received this letter because you are the owner of a property that will benefit from a noise barrier (see the proposed location on the attached aerial photograph). The property address is the same as the address shown above. Therefore, we are seeking your opinion as to whether you would be in favor of a new noise barrier that would reduce traffic noise. If approved in the final design phase, this noise barrier would be constructed as shown on the attached aerial photograph. Please note that the noise barrier, as shown on the attached aerial photograph, is only under consideration at this time, and there is no guarantee that the proposed noise barrier will be constructed.

This noise barrier is the only noise barrier that was found to be feasible and reasonable, in accordance with the 2011 Traffic Noise Analysis Protocol. The decision will be made based on your response to this survey. If you oppose the proposed noise barrier, the noise barrier will not be constructed. Therefore, it is very important that you share your viewpoint with Caltrans.

To assure formal and timely receipt of your response, please complete and return the enclosed survey sheet in the attached addressed envelope by mailing it. Please note that for your vote to be counted, the survey sheet must be completed, signed, and received by no later than November 30, 2019

If you have any questions regarding the noise barrier survey, please contact Jason Lui at (949) 553-0666 ext. 7328. Mr. Lui is the noise specialist at LSA Associates, Inc. who prepared the Noise Study Report (NSR) as well as the Noise Abatement Decision Report (NADR) for this project.

Sincerely, Kenza Curasty

Reza Aurasteh, Ph.D., PE District 12, Environmental Engineering

Attachments: Survey Sheet, Aerial Photograph

Survey	y Sheet
For Prope	rty Owner
along the southbound side of	f SR 55, 17 th Street Off Ramp
Please complete this survey and mail to: LSA Associates, Inc. 20 Executive Park, Suite 200 Irvine, CA 92614 Attn: Jason Lui	In order to be counted, the survey sheet must be signed and postmarked by no later than November 30, 2019.
This survey sheet is for the property located behind the southbound side of SR 55 along southbound recommended to be built within State Right of Way.	the proposed noise barrier, which is to be located on 17 th street off ramp. The proposed noise barrier is
As the property owner, please review the enclosed as the items below that apply, and sign and return via m	erial photograph, complete the following by checking ail.
Yes, I am in favor of the proposed Noise Bar prefer the noise barrier height to be (please c	rrier No. 1.1 as shown on the attached figure. I would heck only one height):
\Box 12 feet \Box 14 feet \Box 16 feet	
* Note: During the design phase, a 14-foot-high ba constructed.	nrier will be constructed if the 16-foot-high barrier cannot be

Noise Barrier No. 1.1

No, I am not in favor of the proposed noise barrier above.

Additional Comments:

Print First, Last Name(s)

Signature

Street Address of the Property

Date

City, Zip Code



LSA LSA ASSOCIATES, INC

NOV 1 4 2019

Noise Barrier No. 1.1

RECEIVED IRVINE

Survey Sheet For Property Owner along the southbound side of SR 55, 17th Street Off Ramp

Please complete this survey and mail to: LSA Associates, Inc. 20 Executive Park, Suite 200 Irvine, CA 92614 Attn: Jason Lui

In order to be counted, the survey sheet must be signed and postmarked by no later than November 30, 2019.

This survey sheet is for the property located behind the proposed noise barrier, which is to be located on the southbound side of SR 55 along southbound 17th street off ramp. The proposed noise barrier is recommended to be built within State Right of Way.

As the property owner, please review the enclosed aerial photograph, complete the following by checking the items below that apply, and sign and return via mail.

Yes, I am in favor of the proposed Noise Barrier No. 1.1 as shown on the attached figure. I would prefer the noise barrier height to be (please check only one height):

12 feet

 \Box 16 feet^{*} 14 feet

* Note: During the design phase, a 14-foot-high barrier will be constructed if the 16-foot-high barrier cannot be constructed.

Date

No, I am not in favor of the proposed noise barrier above.

Additional Comments:

Last Name(s) 3 N. Tuston Al Print First, Last Name(s)

Address of the Property

Signature

CA

City, Zip Code

4.2.9 Air Quality Conformity Analysis Determination

An Air Quality Conformity Analysis (November 2019) was prepared for this project and was transmitted to FHWA on December 11, 2019, following the conclusion of the public review period for the environmental document and PDT identification of the Preferred Alternative. On February 25, 2020, FHWA issued the Project Level Conformity Determination that SR 55 Improvement Project (I-5 to SR 91) conforms with the SIP in accordance with 40 CFR Part 93 (see Appendix G for a record of the correspondence).

4.3 Community Outreach and Public Involvement

4.3.1 Project Development Team

The cities of Tustin, Santa Ana, Orange, and Anaheim participate in the regular PDT meetings conducted by OCTA and Caltrans for the SR 55 Improvement Project. The PDT meetings cover a wide range of topics related to the proposed project, including development and evaluation of alternatives, engineering consideration, environmental issues and the environmental document and documentation process.

4.3.2 Orange County Transportation Authority Project Website

The OCTA maintains a <u>webpage</u> that provides information to the public regarding the proposed SR 55 project and the status of the environmental document and the environmental documentation process for the project.

4.3.3 Public Review/Circulation of Draft IS/EA

The public participation methods used for the Draft IS/EA included mailing lists, newspaper notices/articles, direct mailings, public hearing, and web-based information. Public circulation of the Draft IS/EA began on September 30, 2019, for a 30-day review period and ended on October 30, 2019.

As required by CEQA Guidelines Section 15072, a public Notice of Intent (NOI) to Adopt a Mitigated Negative Declaration and Availability of Initial Study, Notice of Public Meeting for the proposed SR 55 Improvement Project between I-5 and SR 91 was submitted to the State Clearinghouse and Orange County Clerk on September 27, 2019. The NOI was also mailed to all of the agencies and persons that requested to be notified. The Notice of Completion was provided to the State Clearinghouse for purposes of documenting circulation, and copies of the Draft IS/EA were also transmitted for distribution to various State agencies.

Advertisements of the public hearing for the Draft IS/EA were posted to the following four newspapers:

- Orange County Register on September 30, 2019, and October 6, 2019
- Anaheim Bulletin and Irvine World News on October 3, 2019
- Excelsior/Unidos on October 4, 2019

Printed copies of the Draft IS/EA were mailed to responsible agencies and other agencies and were made available for public review at the following locations:

Caltrans District 12 1750 East 4th, Suite 100 Santa Ana, CA 92705 Orange County Transportation Authority 550 South Main Street Orange, CA 92868 Orange Public Library 407 East Chapman Avenue Orange, CA 92866

Charles P. Taft Branch Library	S
740 East Taft Avenue	2
Orange, CA 92865	S

Santa Ana Public Library 26 Civic Center Plaza Santa Ana, CA 92701 Tustin Branch Library 345 East Main Street Tustin, CA 92780

A public hearing was held during the 30-day public review on October 16, 2019, from 6:00 p.m. to 8:00 p.m. at the Orange Public Library in Orange, California. The meeting was held in an open house format with no formal presentation. Approximately 75 members of the public attended the meeting. Comment cards were provided at the meeting for the public to write their comments. Ten comments cards were received during the public hearing. A court reporter was also present and officially recorded verbal comments from four individuals. Representatives from the Caltrans District 12 environmental and design, the consultant team (Jacobs), and OCTA also attended the public hearing. Nearly 75 comments consisting of letters, emails, comment cards, and officially recorded verbal comments were received during the public review period. Responses to comments received during the Draft IS/EA public circulation period and responses to any potential comments received during the public circulation period for this Draft IS/EA will be provided in the Final IS/EA. Section 4.3.4 explains the individual comments and responses, which are organized and presented in this Final IS/EA.

4.3.4 Comments and Responses to Public Comments

A total of 62 comments were received on the Draft IS/EA. These comments were received via email and at the October 16th public hearing. The types of comments and number received is summarized in Table 4.3-1:

Type of Comment	Number Received
Comments from Federal agencies	1
Comments from State agencies	1
Comments from Regional agencies and organizations	4
Comments from Local agencies and organizations	3
Comment Cards at public hearing	10
Comments recorded by court reporter at public hearing	4
Comments received by email and not part of a government agency or organizations	39
Total Number of Public Comments	62

Table 4.3-1: Summary of Comments by Type and Number	Table 4.3-1:	Summary	of Comments	by Type and	Number
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Comments received during the public review period and at the public hearing consisted of the following topics:

- Air Quality
- Alternatives
- Noise
- Traffic
- Project Alternatives
- Request for Environmental Document

Table 4.3-2 provides a complete indexed list of the comments received during the public circulation of the Draft IS/EA, including the comment cards received at the open house meeting. The index numbers are based on an identifying letter and number for each comment for organizational purposes.

Comment ID	Commenter Name	Comment Type	Comment Date
CC-1	Michael Austin	Comment Card	10/16/2019
CC-2	Don N. Holthe	Comment Card	10/16/2019
CC-3	Dean Thomas	Comment Card	10/16/2019
CC-4	Francine Scinto	Comment Card	10/16/2019
CC-5	George Dore	Comment Card	10/16/2019
CC-6	Tyler Castro	Comment Card	10/16/2019
CC-7	Roberto Nieto	Comment Card	10/16/2019
CC-8	Anonymous	Comment Card	10/16/2019
CC-9	Melinda Hasenohrl	Comment Card	10/16/2019
CC-10	John Reynolds	Comment Card	10/16/2019
F-1	Brian Trushinski	Federal Government	10/15/2019
S-1	Gail K. Sevrens, Simona Altman	State Government	10/29/2019
R-1	Fiona Sanchez	Regional Government	10/8/2019
R-2	Lijin Sun, J.D.	Regional Government	10/22/2019
R-3	Michael R. Markus	Regional Government	10/22/2019
R-4	Cindy Salazar, Richard Vuong	Regional Government	10/30/2019
L-1	Ruben Castaneda	Local Government	10/17/2019
L-2	Rafael Cobian	Local Government	10/28/2019
L-3	Doug Keys	Local Government	10/30/2019
PC-1	Gary Gettman	Email	09/30/19
PC-2	Karen Chapman, PE	Email	10/01/19
PC-3	ES	Email	10/03/19
PC-4	Karen DiCarlo	Email	10/05/19
PC-5	Cheryl Hyon	Email	10/5/2019
PC-6	Francis Hunter	Email	10/11/19
PC-7	Mike Hampson	Email	10/11/19
PC-8	Jeff Gomes	Email	10/11/19
PC-9	David Schilpp	Email	10/11/19
PC-10	Lauren Murphy	Email	10/14/19
PC-11	Sean Noonan	Email	10/14/2019
PC-12	Sean Noonan	Email	10/14/2019
PC-13	Diane Thomas	Email	10/15/19
PC-14	Herb Cooley	Email	10/15/19
PC-15	Mike Lebeau	Email	10/15/19
PC-16	Sean Noonan	Email	10/15/19
PC-17	John Reynolds	Email	10/15/19
PC-18	Francine Scinto	Email	10/16/19

Table 4.3-2: Index List of Public Comments Received
Comment ID	Commenter Name	Comment Type	Comment Date
PC-19	Roxane Irene Kobalka	Email	10/16/19
PC-20	Theresa Laughlin	Email	10/16/19
PC-21	Mary Flores	Email	10/17/19
PC-22	Jackson Hurst	Email	10/17/19
PC-23	Alma Karic	Email	10/17/19
PC-24	John Farrell	Email	10/20/19
PC-25	Joanne Ady	Email	10/20/19
PC-26	Linda Cota-Robles	Email	10/20/19
PC-27	Edward and Jennifer Farrell	Email	10/21/19
PC-28	Jessica Prechtl	Email	10/21/19
PC-29	Sharon Galasso	Email	10/22/19
PC-30	Alan Kinkaid	Email	10/22/2019
PC-31	Sparrow LaPoint	Email	10/22/2019
PC-32	Lawrence A. Klein	Email	10/25/2019
PC-33	Martha Michalak	Email	10/29/2019
PC-34	Mike Campisi	Email	10/30/2019
PC-35	Matthew Barrass	Email	10/30/2019
PC-36	Denis Bilodeau	Email	10/30/2019
PC-37	Lawrence A. Klein	Email	10/31/2019
PC-38	Lawrence A. Klein	Email	11/1/2019
PC-39	Daniel Slater	Email	12/5/2019
TR-1	Steven Lichten	Public Hearing Court Reporter	10/16/2019
TR-2	Mr. Santucci	Public Hearing Court Reporter	10/16/2019
TR-3	David Montoya	Public Hearing Court Reporter	10/16/2019
TR-4	Mark Michalak	Public Hearing Court Reporter	10/16/2019

Copies of the public comments received and the respective responses are provided in Appendix F. Since a number of comments received have similar concerns, common responses were developed to address these concerns. Comments that fall under similar topics were assigned common responses, such as the following:

- Noise impacts/Sound walls
- Air Quality/Pollution
- Request/Inquiry on improvements to ramps at Chapman Avenue that are not a part of the proposed project
- Request for copy of Draft IS/EA.

There were 19 comments requesting copies of the Draft IS/EA. Caltrans responded to all of these comments with a link to the electronic copy of the environmental document.

Common Response 1 (CR-1): Noise Impacts/Sound Walls

The proposed project would add one northbound general-purpose lane between I-5 and SR 22 and one southbound general-purpose lane between I-5 and SR 22, provide additional capacity on the southbound SR 55 Katella Avenue off- and on-ramps, and relocate the southbound SR 55 Lincoln Avenue off-ramp approximately 1,300 feet to the south. However, no physical improvements are proposed for the ramps at Chapman Avenue and along SR 55 between La Veta and Chapman Avenue (Figure 1.3-1) and this area is beyond the limits of the noise study area. Because the area is beyond the limits of the noise study area, no noise barriers would be identified. The Noise Study Report was prepared based on current Caltrans guidelines and procedures from the May 2011 Caltrans Traffic Noise Analysis Protocol and the September 2013 Technical Noise Supplement.

Common Response 2 (CR-2): Air Quality/Pollution

Caltrans has adopted FHWA guidance for evaluating MSAT emissions. As disclosed in the IS/EA and the Air Quality Report, implementation of the Proposed Project would result in daily MSAT emissions of lesser magnitude than the Baseline (2017) emissions and the No-Build Alternative emissions in both the opening year (2035) and the design year (2055). Thus, implementation of the Proposed Project would reduce MSAT emissions, resulting in lower concentrations at receptor locations. The analysis also did not identify a significant regional or localized air quality impact associated with construction of the Proposed Project.

Common Response 3 (CR-3): Ramps at Chapman Avenue

At the early stage of the project, the PDT evaluated potential improvements at the southbound SR 55 on-ramp from eastbound Chapman Avenue. To prevent the weaving from eastbound Chapman Avenue on-ramp to southbound SR 55, the PDT looked into potential access restriction at this on-ramp to only allow the on-ramp traffic to access westbound SR 22. However, the access restriction would redirect a large amount of traffic from eastbound Chapman Avenue to use the loop on-ramp in order to access southbound SR 55 and would degrade traffic operations at the southbound SR 55/Chapman intersection and result in significant vehicle queue and additional safety concerns along eastbound Chapman Avenue. Because of the adverse impact to traffic operations and safety, this access restriction option was dropped from further consideration Please see additional discussion in Section 1.3.4, Alternatives Considered But Eliminated from Further Study.

Common Response 4 (CR-4): Request for Draft IS/EA

The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.

Chapter 5 List of Preparers

The following persons were principally responsible for the preparation of this IS/EA and supporting technical studies.

5.1 California Department of Transportation, District 12

- Askaribehbahani, Farid, Transportation Engineer, Civil, Range C. B.S in Civil Engineering, Roger Williams College, RI. Over 40 years of experience (26 years with Caltrans) working in various transportation-related disciplines, including Environmental, Design, Hydraulics, Stormwater Pollution Protection Plan, and Construction. Contribution: Noise Specialist, Review of Noise Study Report, Noise Abatement Decision Report, Draft Environmental Document, and Final Environmental Document report.
- Aurasteh, Reza, Ph.D., P.E., Branch Chief of Environmental Engineering, 30 years of experience in Public Works and Environmental Engineering. **Contribution**: Review of Air Quality Report, Traffic Noise Analysis Report, and Hazardous Waste Investigation Report.
- Baker, Charles, Senior Environmental Planner. B.A. in Anthropology, California State University, Fullerton, CA. M.A. in History, California State University, Fullerton, CA. 19 years of experience in environmental planning. Contribution: Senior review of the IS/EA.
- Barker, Kristopher, Engineering Geologist. B.S. in Earth Sciences. University of Southern California. 17 years of experience. **Contribution:** Preparation of the Preliminary Geotechnical Assessment.
- Behtash, Arman, Civil and Environmental Engineer. B.S., University of Wisconsin, Madison,WI. 30 years of experience in environmental engineering field. Contribution: Hazardous Waste and Air Quality.
- Chiou, Wayne, Transportation/Environmental Engineer. P.E. M.S. in Civil and Environmental Engineering, Utah State University, Logan, UT. 28 years of experience in consulting engineering and environmental engineering. **Contribution:** ISA.
- Caraig, Jr., Ricardo, Transportation Engineer. B.S. in Civil Engineering. 26 years of experience. **Contribution:** Noise Study Report, IS/EA reviewer.
- Chy, Vathana, Landscape Associate. B.S. in Landscape Architecture, California Polytechnic University, Pomona, CA. 21 years of experience. **Contribution:** Preparation of the Scenic Resource Evaluation and Visual Impact Assessment.
- Dickson, Eric, Senior Landscape Architect. B.S. in Landscape Architecture, California State Polytechnic University, Pomona, CA. 16 years of experience in Visual Impact Assessments and aesthetic master plans. **Contribution:** Senior review of the Visual Impact Assessment.

- Dinh, Phi, Senior Transportation Engineer. M.S. in Civil Engineering. 17 years of experience in Hydraulics/Drainage Design. **Contribution:** Location Hydraulics Study/Summary Floodplain Evaluation Report.
- Heydari, Bahar, Associate Environmental Planner (Generalist). B.S. in Geography with Emphasis in Environmental Analysis, California State Polytechnic University at Pomona, CA. 10 years of experience in Environmental Analysis Unit. Contribution: Peer Reviewer.
- Ketsela, Kedest, Associate Environmental Planner (Biologist). B.S. in Natural Science, California State University, Los Angeles, CA. 18 years of experience.
 Contribution: Oversight preparation of the Biological Assessment, Jurisdictional Delineation Report, Natural Environment Study, IS/EA review.
- Liu, Brian, Associate Environmental Planner. B.A. in Geography, California State University, Long Beach, CA. 14 years of experience in environmental planning. **Contribution:** Quality Assurance/Quality Control (QA/QC) review of the IS/EA.
- Patel, Hitesh, Transportation Engineer Civil. M.S. in Civil Engineering, California State University, Fullerton, CA. 23 years of experience in Hydraulics. **Contribution:** Review Hydrology and Floodplain section.
- Piña-Garrett, Grace, Senior Transportation Engineer, National Pollutant Discharge Elimination System Unit. B.S. in Civil Engineering, California State University, Long Beach, CA. 21 years of experience in engineering and water quality. Contribution: Senior review of the Water Quality Report.
- Salas, Hector B., Associate Environmental Planner. B.A. in Environmental Analysis and Design, University of California, Irvine, CA. 18 years of experience in Water Quality. **Contribution:** Water Quality Analysis Report.
- Sinopoli, Cheryl, Associate Environmental Planner (Archaeologist). B.A. in Anthropology, California State University, Bakersfield, CA. 18 years of experience in environmental planning. **Contribution:** Review of the Cultural and Paleontological technical studies and environmental document.
- Varipapa, Mike, P.E., P.M.P. B.S. in Civil Engineering, California State University, Long Beach, CA. 31 years with Caltrans. **Contribution:** Project Management.
- Waterston, Chris, Associate Environmental Planner (Biologist). B.S. in Biological Sciences, California State University, Fullerton, CA. 7 years of experience in environmental planning/biology. Contribution: Biologist review of the Natural Environment Study and IS/EA.

5.2 Orange County Transportation Authority

Lee, Jeannie, Project Manager. B.S. in Structural Engineering, University of California, San Diego, CA. M.S. in Civil Engineering, Cal State Long Beach, CA. 19 years of experience in transportation planning and design. **Contribution:** Project Management & review of the IS/EA.

5.3 Jacobs Engineering

- Froelich, Julie, Senior Environmental Planner. B.S. in Physiology and Neurological Sciences, University of California at San Diego, CA. B.A. in History, University of California at San Diego, CA. 18 years of experience in performing environmental studies and document preparation. **Contribution:** Environmental document preparation and QA/QC.
- Gonzalez, P.E., Joe, Project Manager. B.S. in Civil Engineering, Cal Poly Pomona, CA. 33 years of experience in civil engineering. **Contribution:** Project Manager.
- Hoyt, Jim, Environmental Program Manager. B.S. in Forestry (Forest Science), Humboldt State University, Arcata, CA. 34 years of experience in environmental and natural resources management. **Contribution:** QA.
- Moore (Marshall), Tonya. Biologist. B.S in Biology (Conservation), University of California, Riverside, CA. Over 20 years of experience in environmental and natural resources management. **Contribution:** QA.
- Minderhout, Hannah, Environmental Planner. B.A. in Environmental Business, University of Redlands, Redlands, CA. 2 years of experience in environmental planning and permitting. **Contribution:** Environmental document preparation and QA/QC.
- Nagai, Ryo, Environmental Planner. B.A. in Urban Studies and Planning, California State University, Northridge, CA. 1 year of experience in environmental planning and permitting. **Contribution:** Assisted with preparation of environmental document.
- Polichetti, P.E., Nick, Project Engineer. B.S. in Civil Engineering, Cal State Fullerton, CA. 12 years of experience in civil engineering. **Contribution:** Project Engineer.
- Peyton, Paige, Senior Environmental Planner. Ph.D. in History and Archaeology, University of Leicester, England. 34 years of experience in archaeology and environmental document preparation. Contribution: AB 52 Tribal consultation support and tracking.
- Priest, Andy. GIS Specialist. B.S. in Natural Resource Management, Colorado State University, Fort Collins, CO. 18 years of experience managing spatial data for transportation planning and environmental permitting. **Contribution:** Resource screening and mapping.
- Ragusa, Dana, Environmental Planner. B.S. in Environmental Studies, University of Central Florida, Orlando, FL. 19 years of experience in environmental planning. **Contribution:** Hazardous Materials Report preparation and Hazardous Materials and Noise sections review.

- St. John, Linda, Technical Writer/Technical Editor. A.A. in Liberal Arts, College of the Desert, Palm Desert, CA. 13 years of experience in technical editing of environmental reports and documents. Contribution: Template development, formatting, and editing of the report.
- Thompson, Meagan, Client Deliverables Manager. B.A. in English Literature, St. Mary's University, San Antonio, TX. 14 years of experience in editing and document management. Contribution: Editing, formatting, Section 508 compliance, and document management.
- Walsh, Jason, Senior Environmental Planner. M.S. in Environmental Management, University of San Francisco, CA. 18 years of experience in environmental planning and permitting. Contribution: Environmental document preparation and QA/QC.
- White, Sally, Accessibility Manager and Client Deliverables Manager. C.S.R., Bryan College of Court Reporting, Los Angeles, CA. 40 years of experience in technical documentation (writing, editing, and coordination); 8 years of experience in accessibility.
 Contribution: Section 508/accessibility oversight.
- Wilkinson, Jessica C., Senior Environmental Planner. M.U.R.P. in Urban and Regional Planning and B.A. in Public Administration/Political Science, California State Polytechnic University, Pomona, CA. 17 years of experience in environmental and city planning.
 Contribution: Environmental document preparation and QA/QC.
- Williams, Melissa, Associate Planner. B.S. in Biological Studies, California State University, Fullerton, CA. 18 years of experience in biological assessments, environmental planning and permitting. Contribution: Biological Studies Section preparation.

5.4 Fehr & Peers

- Luo, Anna, Senior Associate. M.S. in Civil Engineering, Michigan State University, East Lansing, MI. 16 years of experience in transportation planning and engineering. Contribution: Environmental document transportation chapter preparation.
- Stanek, David, Associate. M.S. Civil Engineering, University of California at Davis, CA.
 18 years of experience in transportation planning and engineering.
 Contribution: Environmental document transportation chapter preparation and QA/QC.

5.5 HDR Inc.

Golzari, Farhad, Drainage Engineer, P.E. M.Sc. in Civil Engineering (Hydraulic Structures) and B.Sc. in Civil Engineering (Water Resources Engineering), Sharif University of Technology, Tehran, Iran. GIS certification from Sierra College, Roseville, CA and American River College, Sacramento, CA. 8 years of experiences in highway and urban drainage, and 11 years of experiences in Hydraulic Modeling of Large Dams. Contribution: Location Hydraulic Study. Vu, Uyenlan, Senior Environmental Planner. M.S. in Water Resources Management and M.S. in Urban and Regional Planning, University of Wisconsin-Madison, WI. B.A. in Environmental Analysis & Design/Social Ecology, University of California, Irvine, CA. 13 years of experience in environmental planning and permitting. Contribution: Water Quality Technical Memorandum.

5.6 LSA Associates, Inc.

 Lui, Jason, Associate Senior Noise Specialist. M.S. in Environmental Studies, California State University, Fullerton, CA. 16 years of experience in noise and vibration.
 Contribution: Noise Study Report and Noise Abatement Decision Report.

5.7 Leighton Consulting, Inc.

 Chandra, Djan, Senior Principal Engineer. M.S. Civil Engineering, Texas A&M University, College Station, TX. 30 years of experience in geotechnical engineering.
 Contribution: Geology and geotechnical engineering input.

5.8 Sapphos Environmental, Inc.

- Chasteen, Carrie, Historic Resources Manager. M.S. in Historic Preservation, School of the Art Institute of Chicago, IL. 17 years of experience in cultural resource management and regulatory compliance. **Contribution:** Area of Potential Effects Map, Historic Property Survey Report, Historical Resource Evaluation Report, and QA/QC.
- Madsen, Alexandra, Architectural Historian. M.A. in Art History, University of Texas at Austin, TX. 7 years of experience in cultural resource management and regulatory compliance.
 Contribution: Historic Property Survey Report and Historical Resource Evaluation Report.

5.9 Paleo Solutions, Inc.

- Aron, Geraldine, Paleontological Program Manager. M.S. in Geological Sciences, California State University, Long Beach, CA. 21 years of experience in paleontological investigations. Contribution: QA/QC of Paleontological Identification and Evaluation Report.
- Chandler, Evelyn, Principal Archaeologist. M.A. in Archaeology and Heritage, University of Leicester, England. 27 years of experience in cultural resources management.Contribution: Principal Investigator and QA/QC for Archaeological Survey Report.
- Denniston, Elizabeth, Archaeologist. M.A. in Anthropology, California State University, Los Angeles, CA. 22 years of experience cultural resources management. **Contribution:** Contributor to Archaeological Survey Report.
- Hatheway, Jeffrey, Safety Officer. M.S. in Geology, California State University, Fullerton, CA. 16 years of experience in environmental consulting. **Contribution:** preparation of Health and Safety Plan for archaeological and paleontological field surveys.

- Kay, Michael, R.P.A., Archaeologist. M.A. in Anthropology (Zooarchaeology), University of Florida, Gainesville, FL. 16 years of experience in cultural resources management.
 Contribution: Archaeological data review, field survey, and preparation of Archaeological Survey Report.
- Raum, Joey, Paleontologist. B.S. in Geology, University of Maryland, College Park, MD. 8 years of experience in California paleontology. **Contribution:** Paleontological data review, field survey, and preparation of Paleontological Identification and Evaluation Report.
- Richards, Courtney, Principal Paleontologist. M.S. in Biological Sciences (Paleontology), Marshall University, Huntington, WV. 16 years of experience in paleontology.
 Contribution: Principal Investigator for Paleontological Identification and Evaluation Report.
- Webster, Barbara, GIS Specialist. M.S. in Geographic Information Systems, University of Redlands, CA. 9 years of experience in environmental consulting.
 Contribution: Preparation of figures for Archaeological Survey Report and Paleontological Identification and Evaluation Report.

5.10 Terry A. Hayes Associates Inc.

- Silverman, Sam, Senior Associate. M.S. in Public Health, University of California, Los Angeles, CA. 18 years of experience in environmental planning, specializing in air quality and greenhouse gases. **Contribution:** Oversight of the Air Quality Study and associated environmental documentation, including the climate change and energy analyses.
- Sutherland, Anders, Environmental Scientist. B.S. in Atmospheric, Oceanic, and Environmental Sciences, University of California, Los Angeles, CA. 9 years of experience in environmental planning specializing in air quality and greenhouse gases.
 Contribution: Air Quality Study and associated environmental documentation, including the climate change and energy analyses.

5.11 Tatsumi & Partners, Inc.

- Kang, Weywantheawy, Designer/Visual Analyst. B.S. in Landscape Architecture, California Polytechnic University, Pomona, CA. 9 years of experience in landscape architecture, 6 of those years in visual impact assessment reports. **Contribution:** Visual Impact Assessment document preparation, research, and analysis.
- Tatsumi, David H., Principal Landscape Architect. B.S. in Landscape Architecture, California State Polytechnic University, Pomona, CA. Over 30 years of experience in landscape architecture, urban planning, and consulting services. **Contribution:** Visual Impact Assessment document preparation and QA/QC.

Chapter 6 Distribution List

The following entities have been notified that this Final IS/EA is available for public review. In addition, all property owners and occupants within a 0.25-mile radius of the project limits will be provided the Notice of the Availability of the Final IS/EA.

6.1 Federal Agencies

Mark Cohen United States Army Corps of Engineers 915 Wilshire Boulevard, Ste. 1101 Los Angeles, CA 90017

U.S. EPA Pacific Southwest, Region 9 75 Hawthorne Street San Francisco, CA 94105

6.2 State Agencies

David Bunn, Director California Department of Conservation 801 K. Street, MS 24-01 Sacramento, CA 95814

Darrin Polhemus, Deputy Director State Water Resources Control Board 1001 I Street Sacramento, CA 95814

Gail K. Sevrens, Environmental Program Manager California Department of Fish & Wildlife, South Coast Region 3883 Ruffin Road San Diego, CA 92123

Executive Officer State Clearinghouse Office of Planning and Research 1400 Tenth Street Sacramento, CA 95814

California Public Utilities Commission Attn: Director 320 West 4th Street, Ste. #500 Los Angeles, CA 90013 G. Mendel Stewart, Field Supervisor United States Fish and Wildlife Service Carlsbad Field Office 2177 Salk Avenue, Ste. 250 Carlsbad, CA 92008

Gregor Blackburn, CFM, Branch Chief Floodplain Management and Insurance Branch, United States Department of Homeland Security Federal Emergency Management Agency Region IX 1111 Broadway, Ste. 1200 Oakland, CA 94607

Ms. Julianne Polanco, SHPO Office of Historic Preservation Department of Parks & Recreation 1725 23rd Street, Ste. 100 Sacramento, CA 95816

Mark Cowin, Director California Department of Water Resources 1416 9th Street Sacramento, CA 95814

Joshua Shaw, Director California Transit Association 1415 L Street, Ste. 1000 Sacramento, CA 95814

California Highway Patrol Office 675 2031 E. Santa Clara Avenue Santa Ana, CA 92705

California Transportation Commission 1120 N Street, Room 2221 (MS-52) Sacramento, CA 95814 California Department of Toxic Substances Control P.O. Box 806 Sacramento, CA 95812-0806

Richard Corey, Executive Officer California Air Resources Board 1001 I Street Sacramento, CA 95812

Chief-Cy Oggins State Lands Commission Sacramento Office 100 Howe Avenue, Ste. 100 South Sacramento, CA 95825-8202

6.3 Regional Agencies

Southern California Association of Governments Attn: Intergovernmental Review 818 W. 7th Street, 12th Floor Los Angeles, CA 90017-3435

Transportation Corridor Agencies Foothill/Eastern Transportation Corridor Agency Michael A. Kraman, CEO 125 Pacifica Irvine, CA 92618

6.4 County Agencies

Nardy Khan, Deputy Director OC Infrastructure Programs 300 North Flower Street, 7th Floor Santa Ana, CA 92703

Richard Vuong, Manager, Planning Division OC Public Works Service Area/OC Development Services 601 N. Ross Street Santa Ana, CA 92701

Amanda Carr, Deputy Director OC Environmental Resources 300 North Flower Street, 7th Floor Santa Ana, CA 92703 Native American Heritage Commission 1550 Harbor Boulevard, Ste. #100 West Sacramento, CA 95691

California Energy Commission Attn: Executive Director, Environmental Office 1516 Ninth Street Sacramento, CA 95814

Cal Fire Southern Region Operations 2524 Mulberry Street Riverside, CA 92501

Hope A. Smythe, Executive Officer Regional Water Quality Control Board - Santa Ana Region 8 3737 Main Street, Ste. 500 Riverside, CA 92501

Lijin Sun, J.D. Program Supervisor CEQA Intergovernmental Review South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765

Orange County Transportation Authority Attn: Jeannie Lee 550 S. Main Street Orange, CA 92863

Stacey Blackwood, Director, OC Community Resources 13042 Old Myford Road Irvine, CA 92602

Orange County Transportation Authority Attn: Dan Phu 550 S. Main Street Orange, CA 92863

6.5 Local Agencies

6.5.1 Tustin

Doug Stack, Director Public Works Department City of Tustin 300 Centennial Way Tustin, CA 92780

6.5.2 Santa Ana

Fuad S. Sweiss, PE, PLS Executive Director 20 Civic Center Plaza Ross Annex, M-20 Santa Ana, CA 92702

6.5.3 Orange

Christopher Cash Public Works Director 300 East Chapman Avenue Orange, CA 92866

6.5.4 Anaheim

Rudy Emami Public Works Director 200 South Anaheim Boulevard Suite 276 Anaheim, CA 92805

6.5.5 County of Orange

Shane L. Silsby, P.E. Director of OC Public Works 300 North Flower Street Santa Ana, CA 92703-5000

6.5.6 Districts

Dr. Gregory Franklin Superintendent Tustin Unified School District 300 South C Street Tustin, CA 92780

Jim Herberg, General Manager Orange County Sanitation District 10844 Ellis Avenue Fountain Valley, CA 92708

Stefanie P. Phillips Superintendent Santa Ana Unified School District, 1601 East Chestnut Avenue Santa Ana, CA 92701

Michael Markus, General Manager Orange County Water District 18700 Ward Street Fountain Valley, CA 92708

Gunn Marie Hansen Superintendent Orange Unified School District 1401 North Handy Street Orange, CA 92867-4434

6.5.7 Libraries

Helen Fried, County Librarian Tustin Library 345 East Main Street Tustin, CA 92780

Charles P Taft Branch Library 740 East Taft Avenue Orange CA 92865

Orange Public Library 407 East Chapman Avenue Orange CA 92866

6.6 Federal Legislators

Hon. Dianne Feinstein, Member United States Senate 11111 Santa Monica Boulevard, Suite #915 Los Angeles, CA 90025-3343

Hon. Lou Correa 46th Congressional District United States House of Representatives 2323 North Broadway, Suite 319 Santa Ana, CA 92706

6.7 State Legislators

Steven Choi, Member 68th Assembly District, State of California 3240 El Camino Real, Suite 110 Irvine CA 92602

Hon. John Moorlach, Member 37th Senate District, State of California 940 South Coast Drive, Suite #185 Costa Mesa, CA 92626

6.8 Local Elected Officials

Mayor Charles Puckett City of Tustin 300 Centennial Way Tustin, CA 92780

Mayor Harry Sidhu 200 South Anaheim Boulevard 7th floor Anaheim, CA 92805

Mayor Miguel Pulido City of Santa Ana P.O. Box 1988, M31 Santa Ana, CA 92701 Hon. Kamala Harris, Member United States Senate 312 South Spring Street, Suite 1748 Los Angeles, CA 90012

Hon. Katie Porter 45th Congressional District United States House of Rep 2151 Michelson Drive, Suite 195 Irvine, CA 92612

Hon. Tom Daly, Member 69th Assembly District, State of California 2400 East Katella Avenue, Suite 640 Anaheim, CA 92806

Hon. Tom Umberg, Member Senate District 34 1000 E. Santa Ana Boulevard, Suite 220 Santa Ana, CA 92701-3900

Hon. Andrew Do OC Board of Supervisors 1st District Supervisor 333 West Santa Ana Boulevard Santa Ana, CA 92701

Mayor Mark A. Murphy City of Orange 300 East Chapman Avenue Orange, CA 92866

Hon. Donald P. Wagner OC Board of Supervisors 3rd District Supervisor 333 West Santa Ana Boulevard Santa Ana, CA 92701

6.9 Interested Groups, Organizations, and Individuals

Mr. Charles Alvarez, Gabrielino-Tongva Tribe 23454 Vanowen Street West Hills, CA 91307

Mr. Michael Garcia, Vice Chairperson Ewiiaapaayp Tribal Office 4054 Willows Road Alpine, CA 91901

Ms. Sonia Johnston, Chairperson Juaneno Band of Mission Indians P.O. Box 25628 Santa Ana, CA 92799

Javaughn Miller, Tribal Administrator La Posta Band of Mission 8 Crestwood Road Boulevard, CA 91905

Ms. Erica Pinto, Chairperson Jamul Indian Village P.O. Box 612 Jamul, CA 91935

Mr. Andrew Salas, Chairperson Gabrieleno Band of Mission Indians - Kizh Nation P.O. Box 393 Covina, CA 91723

Mr. Robert Welch, Chairperson Viejas Band of Kumeyaay Indians 1 Viejas Grande Road Alpine, CA 91901

Mr. Matias Belardes, Chairperson Juaneno Band of Mission Indians Acjachemen Nation - Belardes 32161 Avenida Los Amigos San Juan Capistrano, CA 92675

Ms. Sandonne Goad, Chairperson Gabrielino /Tongva Nation 106 1/2 Judge John Aiso Street., #231 Los Angeles, CA 900126

Mr. Allen E. Lawson, Chairperson San Pasqual Band of Mission Indians P.O. Box 365 Valley Center, CA 92082 Mr. Anthony Morales, Chairperson Gabrieleno/Tongva San Gabriel Band of Mission Indians P.O. Box 693 San Gabriel, CA 91778

Mr. Robert Pinto, Chairperson Ewiiaapaayp Tribal Office 4054 Willows Road Alpine, CA 91901

Ms. Angela Elliott Santos, Chairperson Manzanita Band of Kumeyaay Nation P.O. Box 1302 Boulevard, CA 91905

Mr. Robert Dorame, Chairperson Gabrielino Tongva Indians of California Tribal Council P.O. Box 490 Bellflower, CA 90707

Mr. Ralph Goff, Chairperson Campo Band of Mission Indians 36190 Church Road, Suite 1 Campo, California 91906

Mr. Cody J. Martinez, Chairperson Sycuan Band of the Kumeyaay Nation 1 Kwaaypaay Court EI Cajon, CA 92019

Ms. Gwendolyn Parada, Chairperson La Posta Band Of Mission Indians 8 Crestwood Road Boulevard, CA 91905

Ms. Teresa Romero, Chairperson Juaneno Band of Mission Indians Acjachemen Nation - Romero 31411-A La Matanza Street San Juan Capistrano, CA 92675

John Valenzuela, Chairperson San Fernando Band of Mission Indians P.O. Box 221838 Newhall, CA 91322

6.10 Utilities, Services, and Businesses

6.10.1 Electricity

Southern California Edison 1241 S. Grand Avenue Santa Ana, CA 92705

Southern California Edison P.O. Box 800 Rosemead, CA 91770

6.10.2 Gas

Questar/Dominion Energy PO Box 45360 Salt Lake City, UT 84145-0360

Sempra Energy Corporate Headquarters 488 8th Avenue San Diego, CA 92101

Joe Lanzisera Southern California Gas – Transmission 9400 Oakdale Avenue Chatsworth, CA 91311

Stefan Faber Southern California Gas – Santa Ana 1919 State College Boulevard Anaheim, CA 92806

6.10.3 Refuse Services

Anaheim Public Utilities 201 South Anaheim Blvd Anaheim, CA 92805

CR&R Incorporated 11292 Western Avenue P.O. Box 125 Stanton, CA 90680

Orange County Sanitation District Kevin Hadden Engineering Department 10844 Ellis Avenue Fountain Valley, CA 92708 Ware Disposal 1035 E. 4th Street Santa Ana, CA 92701 858-271-5893

Waste Management 1612 Construction Circle East Irvine, CA 92606

6.10.4 Telecommunications

AT&T California 1265 N. Van Buren St., Rm 180 Anaheim, CA 92807

City of Orange Public Works Department 300 E. Chapman Avenue Orange, CA 92866

Cox Communications 29947 Avenida De Las Banderas Rancho Santa Margarita, CA 92688

Frontier Communications Joe Gamble – West Region 4811 Airport Plaza Drive, Long Beach, CA 90815

Level 3 Communications 14452 Franklin Avenue Tustin, CA 92780

Verizon (ATC) Communications 15505 Sand Canyon Avenue Irvine, CA 92618

6.10.5 Water

City of Orange Utility Services (Water) 300 E Chapman Ave Orange, CA 92866

Irvine Ranch Water District Fiona M. Sanchez, Director of Water Resources P.O. Box 57000 Irvine, CA 92619-7000

Metropolitan Water District of Southern California 700 North Alameda Street Los Angeles, CA 90012-2944

Metropolitan Water District of Orange County PO Box 20895 Fountain Valley CA 92728

Orange County Water District P.O. Box 8300 Fountain Valley, CA 92728-8300 Santa Ana Municipal Utility Services Santa Ana City Hall 20 Civic Center Plaza First Floor City Hall Annex, Room 1100 Santa Ana, CA 92702

Tustin Water Department City of Tustin 300 Centennial Way Tustin, CA 92780

6.10.6 Sewer

City of Orange 300 E. Chapman Ave. P.O. Box 449 Orange, CA 92866

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Appendix A: Resources Evaluated Relative to the Requirements of Section 4(f): No Use Determination

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Appendix A: Resources Evaluated Relative to the Requirements of Section 4(f): No-Use Determination

This section of the document discusses de minimis impact determinations under Section 4(f). Section 6009(a) of SAFETEA-LU amended Section 4(f) legislation at 23 USC 138 and 49 USC 303 to simplify the processing and approval of projects that have only de minimis impacts on lands protected by Section 4(f). This amendment provides that once the U.S. Department of Transportation (USDOT) determines that a transportation use of Section 4(f) property, after consideration of any impact avoidance, minimization, and mitigation or enhancement measures, results in a de minimis impact on that property, an analysis of avoidance alternatives is not required and the Section 4(f) evaluation process is complete. The FHWA's final rule on Section 4(f) de minimis findings is codified in 23 CFR 774.3 and CFR 774.17.

Responsibility for compliance with Section 4(f) has been assigned to the Department pursuant to 23 USC 326 and 327, including de minimis impact determinations, as well as coordination with those agencies that have jurisdiction over a Section 4(f) resource that may be affected by a project action.

A.1 Introduction

Section 4(f) of the USDOT Act of 1966, codified in federal law at 49 USC 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

This section of the document discusses parks, recreational facilities, wildlife refuges, and historic properties found within or next to the project area that do not trigger Section 4(f) protection because (1) they are not publicly owned, (2) they are not open to the public, (3) they are not eligible historic properties, or (4) the project does not permanently use the property and does not hinder the preservation of the property.

Section 4(f) specifies that the Secretary of Transportation may approve a transportation program or project requiring use of the publicly owned land of a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site), only if:

- There is no prudent and feasible alternative to using that land, and
- The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife or waterfowl refuge, or historic site resulting from the use.

Section 4(f) further requires consultation with the Department of the Interior (DOI) and, as appropriate, the involved offices of the Department of Agriculture and the Department of Housing and Urban Development in developing transportation projects and programs that use

lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer (SHPO) is also needed.

Responsibility for compliance with Section 4(f) has been assigned to the Department pursuant to 23 USC 326 and 327, including determinations and approval of Section 4(f) evaluations, as well as coordination with those agencies that have jurisdiction over a Section 4(f) resource that may be affected by a project action.

The proposed project is a transportation project that may receive federal funding and/or discretionary approvals through USDOT]); therefore, documentation of compliance with Section 4(f) is required.

The FHWA Section 4(f) Checklist, Attachment B, Park, Recreational Facilities, Wildlife Refuges, and Historic Properties Evaluated Relative to the Requirements of Section 4(f), revised September 2003, represents recommended "best practices" for compliance with Section 4(f) requirements. Attachment B of the Section 4(f) Checklist indicates that all archaeological and historical sites within the Section 106 Area of Potential Effects (APE) within approximately 0.5 mile of any of the Build Alternative should be included in the evaluation.

This Section 4(f) analysis provides an overview of parks, recreational facilities, wildlife refuges, and historic properties found within 0.5 mile of the proposed project, in accordance with the requirements of Section 4(f).

The environmental review, consultation, and any other actions required by applicable federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans.

A.1.1 Description of Proposed Project

The California Department of Transportation (Caltrans) District 12, in cooperation with the OCTA, proposes to increase capacity on SR 55 between I-5 and SR 22 and provide operational improvement between SR 22 and SR 91 PM 10.4 and R17.9, traversing the cities of Tustin, Santa Ana, Orange, and Anaheim in Orange County, California. Caltrans is the Lead Agency for compliance under CEQA and NEPA.

A.1.1.1 Build Alternative

The "Build Alternative" includes the following (see Figure 1.3-1):

- One northbound general purpose lane between I-5 and SR 22
- One southbound general purpose lane between I-5 and SR 22
- Additional capacity on the southbound SR 55 Katella Avenue off- and on-ramps
- The southbound SR 55 Lincoln Avenue off-ramp relocated approximately 1,300 feet to the south

One northbound general purpose lane between I-5 and SR 22:

A fifth general purpose lane would be extended on northbound SR 55 between 4th Street and Fairhaven Avenue, eliminating the existing lane drop at 4th Street. To accommodate the additional general purpose lane, the existing auxiliary lane from northbound 4th Street on-ramp to 17th Street, the existing northbound 17th Street loop on-ramp and the existing auxiliary lane from northbound 17th Street direct on-ramp would be realigned to the east to provide room for the fifth general purpose lane. One additional right-turn lane would also be added to the northbound 4th Street off ramp from SR 55. The fifth general purpose lane would become one of two lanes obligated to the westbound SR 22 connector. After the SR 22 connector, the northbound SR 55 will join the existing four general purpose lanes and one HOV lane.

One southbound general purpose lane between I-5 and SR 22:

A fourth general purpose lane would be extended on southbound SR 55 from SR 22 to 4th Street, where it would become one of two obligated lanes to the I-5 southbound connector from SR 55. The existing two-lane eastbound SR 22 to southbound SR 55 connector would join the widened southbound SR 55 mainline as an auxiliary lane and additional general purpose lane. As a result, five general purpose lanes and one auxiliary lane would be present between Fairhaven Avenue and 4th Street. The auxiliary lane from the SR 22 connector would extend to the 17th Street loop off-ramp. The auxiliary lane from the 17th Street off-ramp continues to the 4th Street off-ramp, and the additional general purpose lane is an optional exit to 4th Street. The additional general purpose lane to the southbound I-5 connector. The southbound 4th Street off-ramp from SR 55 would be widened with an extra right-turn lane to improve traffic flow.

Provide additional capacity on the southbound SR 55 Katella Avenue off- and onramps:

An additional lane would be added to the southbound SR 55 Katella Avenue off- and on-ramps.

Relocate the southbound SR 55 Lincoln Avenue off-ramp approximately 1,300 feet to the south:

The existing Lincoln Avenue southbound off-ramp will be relocated to south of Lincoln Avenue (next to the existing southbound hook on-ramp). This ramp relocation will provide operational improvements by increasing the weave length between the westbound SR 91 to southbound SR 55 connector and the Lincoln Avenue off-ramp. The Park and Ride lot would be relocated in-kind within Caltrans right-of-way to the existing southbound Lincoln Avenue off-ramp location.

A.1.1.2 No Build Alternative

The No Build Alternative would not result in the construction of any improvements to the project segment of SR 55 other than routine maintenance. As a result, the No Build Alternative would not result in adverse effects related to existing and planned land uses.

A.2 Regulatory Setting

This evaluation identifies the Section 4(f) resources in the study area, describes the nature and extent of the potential effects on these properties, evaluates the Build Alternative with respect to the use of Section 4(f) resources, and describes measures to minimize harm to the affected resources.

A.2.1 Determining Section 4(f) Resources

Five steps are involved in Section 4(f) analysis:

- 1. Determine if Section 4(f) applies to the project.
- 2. Determine if Section 4(f) properties are within the project vicinity.
- 3. Determine if there is a "use" of the Section 4(f) property.
- 4. Determine if there is an exception to the "use" of the Section 4(f) property.
- 5. Determine the level of approval required for the "use."

Protected resources include:

- Public parks and schools with publicly accessible recreational areas
- Recreational areas of national, State, or local significance
- Wildlife or waterfowl refuges
- Historic sites of national, State, or local significance

A.2.2 Section 4(f) Use

As defined in 23 CFR 774.17, a "use" of a protected resource occurs when any of the following conditions are met:

- Direct Use: Land is permanently incorporated into a transportation facility.
- Temporary Use: There is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose, as determined by the criteria in 23 CFR 774.13(d).
- Constructive Use: There is a constructive use of a Section 4(f) property, as determined by the criteria in 23 CFR 774.15.

A.2.2.1 Direct Use

A direct use of a Section 4(f) resource takes place when part or all of the property designated for protection under Section 4(f) is permanently incorporated into a transportation project (23 CFR Section 774.17). This may occur as a result of partial or full acquisition of a fee simple interest, permanent easements, or temporary easements that exceed the regulatory limits noted below (23 CFR Section 771.135).

A.2.2.2 Temporary Use

A temporary use of a Section 4(f) property occurs when temporary occupancy of a protected property occurs for construction-related activities and when that temporary occupancy is considered adverse in terms of the preservationist purposes of the Section 4(f) statute. If the following five conditions set forth in 23 CFR Section 774.13(d) can be satisfied, Section 4(f) does not apply:

- 1. The duration of the occupancy must be temporary (i.e., shorter than the period of construction) and not involve a change in ownership of the property.
- 2. The scope of the work must be minor, with only minimal changes to the protected resource.
- 3. There are no anticipated permanent adverse physical impacts on the protected resource and no temporary or permanent interference with the activities or purpose of the resource.
- 4. The land being used must be fully restored to a condition that at least equals the condition that existed prior to the proposed project.
- 5. Agreement by the appropriate officials having jurisdiction over the Section 4(f) resource regarding the above conditions must be documented.

A.2.2.3 Constructive Use

A constructive use of a Section 4(f) resource happens when a transportation project does not permanently incorporate land from the resource in the transportation facility, but the proximity of the project to the Section 4(f) property results in adverse proximity impacts (i.e., noise, vibration, visual, access, ecological impacts) so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired (23 CFR Section 774.15). Substantial impairment occurs only if the protected activities, features, or attributes of the Section 4(f) property are substantially diminished by the indirect adverse impacts of the project (23 CFR Section 774.15(a)). This determination is made through the following process:

- Identification of the current activities, features, or attributes of the resource that may be sensitive to proximity impacts
- Analysis of the potential proximity impacts of the project on the resource
- Consultation with the appropriate officials having jurisdiction over the resource (23 CFR Section 774.15(d))

A.3 Section 6(f) Resource Evaluation and Public Park Preservation Act

A.3.1 Section 6(f)

In addition to resources protected under Section 4(f), this project is also required to analyze potential impacts on properties protected or enhanced with Land and Water Conservation Fund (LWCF) grants. Section 6(f)(3) of the LWCF Act (16 USC Section 4601-4) contains provisions to protect federal investments in park and recreational resources and the quality of those resources. State and local governments often obtain grants through the LWCF Act to acquire or make improvements to parks and recreational areas. Section 6(f) of the LWCF Act prohibits the conversion of property acquired or developed with LWCF grants to a non-recreational purpose without the approval of the DOI's National Park Service. Section 6(f) further directs DOI to ensure that replacement lands of equal value, location, and usefulness are provided as conditions to such conversions. Consequently, where conversion of Section 6(f) lands is proposed for roadway and highway projects, replacements will be necessary.

To determine whether LWCF funds were involved in the acquisition or improvement of Section 4(f) resources, California Department of Parks and Recreation database records of all LWCF-funded parks within Orange County were consulted. Two resources in which Section 6(f) funds were used within 0.5 mile of the Build Alternative include Santa Ana Zoo at Prentice Park (ID 2 on Figure A-1) and the Santiago Creek Bike Trail (ID 11 on Figure A-1). Santa Ana Zoo at Prentice Park is approximately 0.4 mile west of the proposed improvements on SR 55. The Santiago Creek Trail crosses beneath SR 55 0.25 mile south of East Chapman Avenue. The nearest proposed project improvements to Santiago Creek are approximately 1.0 mile south near the eastbound SR 22 to northbound SR 55 connector and approximately 3.0 miles north at Katella Avenue SR 55 southbound on-ramp. The proposed project would not result in the conversion of Section 6(f) lands. The properties are Section 4(f) properties, but no "use" will occur. Therefore, the provisions of Section 4(f) do not apply.

A.3.2 Public Park Preservation Act of 1971

In addition to the requirements of Sections 4(f) and 6(f), the Public Park Preservation Act of 1971 (PRC Section 5400 et seq.), which applies to any park operated by a public agency, provides in part that:

"No city, city and county, county, public district, or agency of the state, including any division, department or agency of the state government, or public utility, shall acquire (by purchase, exchange, condemnation, or otherwise) any real property, which property is in use as a public park at the time of such acquisition, for the purpose of utilizing the property for any nonpark purpose, unless the acquiring entity pays or transfers to the legislative body of the entity operating the park sufficient compensation or land, or both, as required by the provisions of this chapter to enable the operating entity to replace the parkland and the facilities thereon."

As described later in Table A-1, the proposed alternative would not result in temporary or permanent use of any park and, therefore, would also not result in the need for any compensation to park owners/operators under the Public Park Preservation Act of 1971.

A.4 Section 4(f) Resource Evaluation

As noted above, resources that are subject to Section 4(f) consideration include publicly owned lands, such as public parks; recreational areas of national, state, or local significance; wildlife and waterfowl refuges; and historic sites of national, state, or local significance. Resources in the project study area were identified if they were:

- Existing publicly owned recreational and park resources, including local, regional, and state resources
- Publicly owned wildlife and waterfowl refuges or conservation areas
- Existing public bicycle, pedestrian, or equestrian trails
- Listed or eligible National Register of Historic Places (NRHP) historic sites

Research was conducted to identify publicly owned parks, recreational areas, wildlife and waterfowl refuges, and land from a historic site within 0.5 mile of the Build Alternative. Locations evaluated are included on Figure A-1. An evaluation of use for each location is provided in Table A-1.

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Park/ Recreational Resource	Location	Owner	Resource Feature	Subject to Section 4(F) Protection	Build Alternative Use Status	Nearest Location Relative to SR 55/Proposed Improvements			
Schools									
Handy Elementary	860 N. Handy St., Orange CA	Orange Unified School District	Outdoor use areas and playground.	Yes	No use ^a	0.06/0.50 mi			
La Veta Elementary	2800 E. La Veta Ave,,Orange CA	Orange Unified School District	Outdoor use areas and playground.	Yes	No use ^a	0.30/0.35 mi			
Nohl Canyon Elementary	4100 Nohl Ranch Rd. Anaheim CA	Orange Unified School District	Outdoor use areas and playground	Yes	No use ^a	0.35/0.40 mi			
Palmyra Elementary	1325 E Paimyra Ave., Oranges CA	Orange Unified School District	Outdoor use areas and playground.	Yes	No use ^a	0.40/0.70 mi			
Helen Estock Elementary	14741 N B Street, Tustin CA	Tustin Unified School District	Outdoor use areas and playground.	Yes	No use ^a	0.20/0.20 mi			
Robert Heideman Elementary	15571 Williams St, Tustin CA	Tustin Unified School District	Outdoor use areas and playground.	Yes	No use ^a	0.30/0.75 mi			
Parks									
McFadden- Pasadena Parkette	17092 Medallion Ave, Tustin CA	City of Tustin	This 0.4-ac park includes green space, a playground, and picnic tables.	Yes	No use ^a	0.08/0.80			
Prentice Park/Santa Ana Zoo	1801 E Chestnut Ave, Santa Ana, 92701	City of Santa Ana	The 19-ac zoo/park features over 80 species of animals, a children's farm, a train ride, and a carousel. There is on-site parking at the zoo/park.	Yes	No use ^a	0.40/0.50 mi			
Cabrillo Park	1820 E Fruit St, Santa Ana, CA 92701	City of Santa Ana	This 10.4-acre park includes baseball and multi- purpose fields, greenspace, picnic tables, and restrooms	Yes	No use ^a	Adjacent/1.0 mi			
Pepper Tree Park	230 W First St, Tustin, CA 92780	City of Tustin	3.3-acre park featuring picnic areas with BBQs, a horseshoe pit, and youth softball diamond.	Yes	No use ^a	0.40/0.40 mi			
Yorba Park and Dog Park	190 S. Yorba St, Orange, CA 92867	City of Orange	Features green space with walking trial, dog park with separate areas for large and small dogs, and access to Santiago Creek Bike Path	Yes	No use ^a	0.08/0.70 mi			

Table A-1: Section 4(f) Eligible Resources

Park/ Recreational Resource	Location	Owner	Resource Feature	Subject to Section 4(F) Protection	Build Alternative Use Status	Nearest Location Relative to SR 55/Proposed Improvements
Grijalva Park at Santiago Creek	368 N Prospect St, Orange, CA 92866	City of Orange	26.5-acre park featuring lighted multipurpose fields, playground, two picnic pavilions and green space, 26,200-square-foot facility that features a dance room with a wood floor, ballet barres and mirror walls, a large multipurpose room, and a spacious gymnasium with basketball and volleyball courts	Yes	No use ^a	0.42/1.1 mi
Handy Park	2143 E Oakmont Ave, Orange, CA 92867	City of Orange	7.31-acre park features barbeques, picnic area, tot-lot baseball and soccer fields, and volleyball court	Yes	No use ^a	Adjacent/0.50 mi
Olive Hills Park	700 S Nohl Canyon Road, Anaheim, CA 92807	City of Anaheim	A 4.8-acre park that features six public tennis courts. Includes a 1-acre dog park with a perimeter walking path, patches of artificial turf, agility equipment, benches, and native plants.	Yes	No use ^a	0.50/0.50 mi
Eisenhower Park	2864 N Tustin Street, Orange, CA 92865	City of Orange	A 20-acre park that features walking paths, picnic tables, a tot lot, sitting benches, barbecue stations, bicycle racks, and restrooms.	Yes	No use ^a	0.05/Adjacent
Santa Ana River Trail	The regional portion extends 29 miles from Green River golf course to Yorba Regional Park to Huntington Beach.	Orange County Parks	Santa Ana River Trail is a multi-use trail/bike path complex that runs alongside the Santa Ana River for 30 miles from the Pacific Ocean at Huntington Beach along the Santa Ana River to the Orange–Riverside County line	Yes	No use ^a	0.45/0.60 mi
Santiago Creek Bike Trail	Adjacent to Santiago Creek	City of Orange	The Santiago Creek Bike Trail (SCBT) consists of a paved trail alongside the Santiago Creek that spans 6 miles from Hart Park to Cannon Street, with one branch that continues north in a City-owned right-of-way from Walnut Ave to Collins Ave where it connects to the City of Villa Park. Bicyclists	Yes	No use ^a	Adjacent/0.50

Notes: Ave: Avenue; CA: California; E: East; mi: mile(s); N: North; S: South; SR: State Route; St: Street; W: West

^a The property is a Section 4(f) property, but no use will occur. Therefore, the provisions of Section 4(f) do not apply.





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SR 55 (I-5 to SR 91) Initial Study/Environmental Assessment

A total of 19 properties were identified within 0.5 mile of the project corridor that would qualify as Section 4(f) resources, which includes six school outdoor use/playgrounds, nine parks, two trails, and two properties eligible for inclusion on the NRHP (see Figure A-1). There are no archaeological sites or wildlife or waterfowl refuges within 0.5 miles of the project corridor.

A.4.1 Schools

Schools within the 0.5-mile study area are listed below. These properties all contain outdoor use areas and playgrounds.

- Helen Estock Elementary
- La Veta Elementary
- Nohl Canyon Elementary
- Palmyra Elementary
- Robert Heideman Elementary

These facilities could support significant walk-on public recreational opportunities and would be eligible for protection under Section 4(f). However, as shown in Table A-1, Helen Estock Elementary School is the nearest location (0.20 mile) to the proposed improvements. The Build Alternative would not involve permanent, temporary, or constructive use of any of school outdoor use or playground facilities. The properties are Section 4(f) properties, but no use will occur. Therefore, the provisions of Section 4(f) do not apply.

A.4.2 Public Parks and Recreation Facilities

Eleven publicly owned parks and recreational areas are within 0.5 mile of the project corridor, as shown in Figure A-1. Of these 11 properties, 9 properties are outdoor parks, and two are trails. Table A-1 provides a summary of all 11 properties, including information on location, ownership, and the facilities available at each property. As shown in Table A-1, the Build Alternative would not involve permanent or temporary use of any of these properties. The properties are Section 4(f) properties, but no use will occur. Therefore, the provisions of Section 4(f) do not apply.

Of the 11 properties, only Eisenhower Park would be close enough to proposed construction activities to potentially be affected indirectly due to proximity impacts.

Eisenhower Park, owned by the City of Orange, is located within 1,500 feet of the proposed Build Alternative improvements associated with relocation of the southbound Lincoln Avenue off-ramp. Eisenhower Park is located across North Tustin Street and approximately 20 feet below grade from the existing southbound Lincoln Avenue off-ramp. The project would relocate Lincoln Avenue southbound off-ramp to south of Lincoln Avenue (next to the existing southbound hook on-ramp). The Park and Ride lot would be relocated in-kind within Caltrans right-of-way to the location of the existing southbound Lincoln Avenue off-ramp location (see Figure 1.3-1). Potential proximity impacts to Eisenhower Park during construction would be associated with construction noise and dust. These would be minimized through Project Features described in Sections 2.13, Air Quality, and 2.14, Noise. The project has no potential to result in adverse proximity impacts so severe that the use of or access to Eisenhower Park would be substantially impaired. The project has no potential to result in a constructive use at Eisenhower Park or any of the other Section 4(f) eligible properties.

A.4.3 National Register Eligible Properties

As discussed in Section 2.7, Cultural Resources, two properties were found eligible for listing in the NRHP:

- 14841 Yorba Street
- 14891 Yorba Street (Chamber House)

As discussed in the Historic Property Survey Report (HPSR) (March 2019), construction and operation of the Build Alternative would not result in a take or easement of these properties. Additionally, the properties have been adjacent to an existing freeway that was constructed more than 50 years ago. Therefore, the project would not result in a direct or indirect impact to historic properties and would not result in a Section 4(f) use. The properties are Section 4(f) properties, but no use will occur. Therefore, the provisions of Section 4(f) do not apply.

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STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY

Gavin Newsom, Governor

DEPARTMENT OF TRANSPORTATION

OFFICE OF THE DIRECTOR P.O. BOX 942873, MS-49 SACRAMENTO, CA 94273-0001 PHONE (916) 654-6130 FAX (916) 653-5776 TTY 711 www.dot.cg.gov



Making Conservation a California Way of Life.

November 2019

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Toks Omishakin Director

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Noviembre de 2019

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Para obtener esta información en un formato alternativo como el Braille o en un lenguaje diferente al inglés, por favor póngase en contacto con la Oficina de Negocios y Oportunidades Económicas del Departamento de Transporte de California, a 1823 14th Street, MS-79, Sacramento, CA 95811; (916) 324-8379 (Teléfono de Texto TTY: 711); o Email Title.VI@dot.ca.gov.

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Appendix C. Avoidance, Minimization and/or Mitigation Summary

In order to be sure that all of the environmental measures identified in this document are executed at the appropriate times, the following Environmental Commitments Record [ECR] would be implemented. During project design, avoidance, minimization, and /or mitigation measures will be incorporated into the project's final plans, specifications, and cost estimates, as appropriate. All permits will be obtained prior to implementation of the project. During construction, environmental and construction/engineering staff will ensure that the commitments contained in this ECR are fulfilled. Following construction and appropriate phases of project delivery, long-term mitigation maintenance and monitoring will take place, as applicable. As the following ECR is a draft, some fields have not been completed, and will be filled out as each of the measures is implemented. Note that some measures may apply to more than one resource area. Duplicative or redundant measures have not been included in this ECR. An asterisk (*) denotes mitigation for a significant impact under California Environmental Quality Act (CEQA).

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Environmental Coordinator: Name Phone No.: 000-000-0000 X PA&ED

PS&E

Construction

ENVIRONMENTAL COMMITMENTS RECORDS (ECR) SR 55 Improvement Project (I-5 to SR 91)

12- ORA-55- 10.4/R17.9 EA 0K720 PN 1213000149

		Responsible		NSSP	Action(s) taken to	Me Con	asure pleted		Environ Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
Utilities and	Emergency Services									
PF-UES-1	During final design, utility relocation plans will be prepared in consultation with the affected utility providers/owners for those utilities that will need to be relocated, removed, or protected in- place. If relocation is necessary, the final design will focus on relocating utilities within existing public rights-of-way (ROWs) and/or easements. The final design will focus on relocating those facilities to minimize environmental impacts as a result of project construction and ongoing maintenance and repair activities. Utility relocations are anticipated to be completed by the various utility owners prior to or during construction. Prior to utility relocation activities, the Contractor will coordinate with affected utility providers regarding potential utility relocations and inform affected utility users in advance about the date and timing of potential service disruptions.	Caltrans Project Engineer/Resident Engineer	During PS&E Prior to and during construction During PS&E and prior to utility relocation activities							
PF-UES-2	Prior to and during construction, the Contractor will coordinate all temporary mainline, ramp, and arterial roadway closures and detour plans with law enforcement, fire protection, and emergency medical service providers to minimize temporary delays in emergency response times, including the identification of alternative routes for emergency vehicles and routes across the construction areas that are developed in coordination with the affected agencies.	Caltrans Project Engineer/Resident Engineer	Prior to and during construction							
Traffic and T	ransportation/Pedestrian and Bicycle Facilities									
PF-T-1	Transportation Management Plan. A Transportation Management Plan (TMP) will be developed during final design and will be implemented by the construction contractor during project construction to address short-term traffic circulation and access effects during project construction. Specifically, during final design, a qualified traffic engineer will prepare the TMP, which will include, but not be limited to, the elements described below to reduce traveler delays and enhance traveler safety during project construction. The TMP will be approved by OCTA									

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Environ Compl	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	and the California Department of Transportation (Caltrans) District 12 during final design and will be incorporated into the plans, specifications, and estimates.									
	The purpose of the TMP is to address the short-term traffic and transportation impacts during construction of the project. The objectives of the TMP are to:									
	Maintain traffic safety during construction									1
	 Effectively maintain an acceptable level of traffic flow throughout the transportation system during construction Minimize traffic delays and facilitate reduction of the overall duration of construction activities Minimize detours and impacts to pedestrians and bicyclists Foster public awareness of the project and related transportation and traffic impacts 									
	Achieve public acceptance of construction of the project and the TMP measures The TMP will contains, but not be limited to, the following elements intended to reduce traveler delay and enhance traveler safety. These elements will be refined during final design and incorporated in the TMP for implementation during project construction.									
	• Public Information/Public Awareness Campaign (PAC). The primary goal of the PAC is to educate motorists, business owners and operators, residents, elected officials, and government agencies about project construction activities and associated transportation impacts. The PAC is an important tool for reaching target audiences with important construction project information and is anticipated to include, but not be limited to:									
	 Rideshare information Brochures and mailers Media releases Paid advertising Public meetings Broadcast fax and email services Telephone hotline Notification to targeted groups Commercial traffic reporters/feeds 									

		Responsible		NSSP	Action(s) taken to	Mea Com	asure pleted		Environ Compl	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	 Visual information Local cable television and news Internet postings Traveler Information Strategies. The effective implementation of a traveler information system during construction is crucial for enabling motorists to make informed decisions about their travel plans and options with real-time traffic information. That real-time traffic information will include information on mainline, ramp, lane, and arterial closures and detours; travel delays; access to adjacent land uses; "businesses are open" signing; and other signing and information to assist travelers in navigating through, around, and in construction areas. Key components of the traveler information system are anticipated to include, but not be limited to: Fixed and portable changeable message signs Ground-mounted signs Automated work zone information systems Highway advisory radio Lane closure website Caltrans highway information network Bicycle and pedestrian information Commute Smart website 									
	 Incident Management. Effective incident management will ensure that incidents in and near construction areas are cleared quickly and do not result in substantial delays for the traveling public in the vicinity of work zones. Incident management includes, but is not limited to: 									
	 Caltrans Construction Zone Enhanced Enforcement Program (COZEEP) Freeway Service Patrol Traffic surveillance stations Caltrans Transportation Management Center Traffic management team Towing services 									
	 Construction Strategies. The TMP will include procedures to lessen the transportation effects of project-related construction activities and will include, but not be limited to, consideration of the following: 									

		Responsible		NSSP	Action(s) taken to	Me: Com	asure pleted		Environ Comp	imental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	 Conflicts with other projects and special events Construction staging alternatives Mainline lane closures Local road closures Ramp and connector closures (no two consecutive on- or off-ramps in the same direction would be closed at the same time) Pedestrian and bicycle detours and facility closures Traffic control improvements Coordination with other projects Project phasing Traffic screens 									
	 Truck traffic restrictions Demand Management. Temporarily reducing the overall traffic volumes on the project segment of State Route 55 (SR 55) could reduce the short-term adverse effects of construction on traffic operations. The TMP will include, but not be limited to, the following strategies that could reduce vehicular demand in the study area during project construction: 									
	 Rideshare incentives Transit services Shuttle services Variable work hours and telecommuting Park-and-ride lots 									
	• Alternate Route Strategies. The TMP will provide strategies for notifying motorists, pedestrians, and bicyclists of planned construction activities. This notification will allow travelers to make informed decisions about their travel plans, including the consideration of possible alternate routes. The TMP will finalize the detour and alternate routes for motorists, specifically addressing the following:									
	 Mainline lane closures Ramp/connector closures Local road closures Temporary highway or shoulder use Local street improvements Temporary detours and closures of bicycle and pedestrian facilities Traffic signal coordination 									

		Responsible		NSSP	Action(s) taken to	Me Con	asure pleted		Environ Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	 The design/build contractor will implement the measures in the TMP during construction. 									
Visual/Aesth	netics									
PF-VIS-1	Architectural treatments and features will be included in the final project design to minimize the loss of, and improve the visual quality on, the project segment of SR 55. The architectural treatments will be developed for retaining walls and noise barriers consistent with the Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment along Orange County's Transportation Network. All wall architectural treatments will be submitted to the California Department of Transportation (Caltrans) District Landscape Architect for review and approval. During construction, the construction contractor will implement the architectural treatments as shown in the project specifications.	Caltrans Project Engineer and Landscape Architect	During PS&E and project construction							
PF-VIS-2	 During final design, a landscape architect will prepare a Landscape Plan to address landscape treatment within the State right-of-way (ROW) along the project segment of SR 55. The Landscape Plan will be submitted to the Caltrans District Landscape Architect for review and approval. During construction, the construction contractor will implement the provisions of the approved Landscape Plan as shown in the project specification. The Landscape Plan may include some of the following: Identifying/defining the minimum standards for providing landscaping: available land, no conflicts with traffic operations and safety, safe access for maintenance and trash removal, and access to irrigation and water if needed Identifying landscaping and hardscape concepts and materials to maintain or improve the visual character of the existing landscaping in the SR 55 ROW from south of Interstate 5 (I-5) to SR 91, including the mainline, ramps, and along noise barriers and retaining walls. The hardscape concepts and materials shall be consistent with the <i>Master Plan of Freeway</i> <i>and Transit Corridor Enhancements: Creating a Quality Environment along Orange County's Transportation Network</i> Incorporating applicable procedures and requirements in the Caltrans Highway Design Manual, Section 902.1, Planting Guidance 	Caltrans Project Engineer and Landscape Architect	During PS&E and project construction							

		Responsible		NSSP	Action(s) taken to	Me Con	asure pleted		Environ Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	 Using drought-resistant plants and xeric (adapted to arid conditions) landscaping techniques 									
	 Providing low-maintenance, erosion-control groundcover species and low-height shrubs in the palette to preserve existing views and prevent erosion 									
	Providing landscaping as soon as possible in the construction process to minimize bare soil and potential erosion effects									
	 Ensuring that the landscape plant palette conforms with adopted Caltrans standard specifications 									
	Replacing landscaping on the temporary construction easement (TCE). The Landscape Plan will require coordination with the owner of the TCE regarding replacement landscaping to its original or better condition after completion of use.									
Cultural Res	sources									
PF-CUL-1	If cultural materials are discovered during site preparation, grading, or excavation, the construction contractor will divert all earth-moving activity within and around the immediate discovery area until a qualified archaeologist can assess the nature and significance of the find. At that time, the Caltrans District 12 Environmental Branch Chief will be coordinated with to determine appropriate course of action.	Caltrans Project Engineer, Caltrans Archaeologist, and Resident Engineer	During construction and post construction (if necessary)							
PF-CUL-2	If human remains are discovered during site preparation, grading, or excavation, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains and the County Coroner shall be contacted. Pursuant to California Public Resources Code (PRC) Section 5097.98, if the remains are thought to be Native American, the Coroner will notify the Native American Heritage Commission, which will then notify the Most Likely Descendant (MLD). At that time, the Caltrans District 12 Environmental Branch Chief will be contacted so they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of California PRC 5097.98 are to be followed as applicable.	Caltrans Project Engineer, Caltrans Archaeologist, and Resident Engineer	During construction and post construction (if necessary)							
Water Qualit	ty and Storm Water Runoff				_					
PF-WQ-1	The project would comply with the provisions of the National Pollutant Discharge Elimination System (NPDES) General Permit	Caltrans Resident Engineer	Prior to construction							

		Responsible		NSSP	Action(s) taken to	Me Con	asure pleted		Environ Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) (Order No. 2009-0009-DWQ, NPDES No. CAS000002), as amended by Order No. 2010-0014-DWQ and Order No. 2012-0006-DWQ.									
PF-WQ-2	The project would comply with the National Pollutant Discharge Elimination System (NPDES) Construction General Permit by preparing and implementing a Storm Water Pollution Prevention Plan (SWPPP) to address all construction-related activities, equipment, and materials that have the potential to impact water quality. The SWPPP will identify the sources of pollutants that may affect the quality of storm water and include Best Management Practices (BMPs) to control the pollutants, such as sediment control, storm drain inlet protection, construction materials management and non-stormwater BMPs. All work must conform to the Construction Site Best Management Practice Requirements specified in the latest edition of the Storm Water Quality Handbooks: Construction Site Best Management Practices Manual to control and minimize impacts of construction and construction-related activities, materials, and pollutants on the watershed. These include, but are not limited to, temporary sediment control, temporary soil stabilization, scheduling, waste management, materials handling, and other non-stormwater BMPs.	Caltrans Resident Engineer	Prior to construction							
PF-WQ-3	Design Pollution Prevention Best Management Practices (BMPs) would be implemented such as preservation of existing vegetation and slope/surface protection systems (permanent soil stabilization), as well as concentrated flow conveyance systems such as roadside concrete ditches, oversized drains, inlets, flared end sections at storm drain outlets, and outlet protection.	Caltrans Resident Engineer	Prior to and during construction							
PF-WQ-4	Caltrans-approved treatment Best Management Practices (BMPs) would be implemented consistent with the requirements of the National Pollutant Discharge Elimination System (NPDES) Statewide Storm Water Permit Waste Discharge Requirements for the State of California, Department of Transportation (Caltrans) (Order No. 2012-0011-DWQ, NPDES No. CAS00003, adopted on September 19, 2012, and effective on July 1, 2013), as amended by Order No. 2014-0006-EXEC (effective January 17, 2014), Order No. 2014-0077-DWQ (effective May 20, 2014) and Order No. 2015-0036-EXEC (effective April 7, 2015).	Caltrans Resident Engineer	Prior to and during construction							

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Enviror Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	Treatment BMPs may include biostrips, biofiltration swales, and infiltration basins.									
Geology/Soi	Is/Seismic/Topography									
PF-GEO-1	Geotechnical Investigation. During the Plans, Specifications, and Estimates (PS&E) phase, a detailed geotechnical investigation will be conducted by qualified geotechnical personnel to assess the geotechnical conditions at the project area. The geotechnical investigation will include exploratory borings to investigate site- specific soils and conditions and to collect samples of subsurface soils for laboratory testing. Those soil samples will be tested to evaluate liquefaction potential, collapsibility potential, stability, and corrosion potential. The project-specific findings and recommendations of the geotechnical investigation will be summarized in a Structure Foundation Report and a Geotechnical Design Report to be submitted to the California Department of Transportation (Caltrans) for review and approval. Those findings and recommendations will be incorporated in the final design of the Build Alternative.	Caltrans Project Engineer and Geotechnical Engineer	During PS&E and prior to construction							
Paleontolog	y					_				
PF-PAL-1	If unanticipated paleontological resources are discovered, all work within 60 feet of the discovery must cease and the construction Resident Engineer will be notified. Work cannot continue near the discovery until authorized.	Caltrans Resident Engineer	During construction							
PALEO-1*	Prior to construction, or initiated at the 65 percent plans, specification and estimate (PS&E) design phase per Caltrans process, a Paleontological Mitigation Plan (PMP) will be prepared. It should provide recommended monitoring areas based on proposed construction activities and locations in sensitive geologic formations, depth of excavation, and results of geotechnical studies completed in the Area of Project Disturbance (APD) and immediate vicinity; a description of a worker training program; detailed procedures for monitoring, fossil recovery, laboratory analysis, and museum curation; notification procedures in the event of a fossil discovery by a paleontological monitor or other project personnel; and a potential cost estimate for mitigation. A curation agreement with a qualified repository with a curator on staff and retrievable storage will be required if paleontological specimens requiring preservation are identified	Caltrans Archaeologist, Caltrans Project Engineer/Office Engineer, and Resident Engineer	During PS&E							

		Responsible		NSSP	Action(s) taken to	Me Con	asure pleted		Environ Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
PALEO-2*	Construction monitoring should initially be implemented for excavations occurring in areas of sediments with paleontological high sensitivity, with the exception of pile-driving activities and drilling using an auger bit that is less than 3 feet in diameter. Excavations in areas of low sensitivity sediments should be periodically spot checked when impacted depths exceed 5 feet to check for the presence of underlying older, high sensitivity deposits unless the depth to underlying sensitive sediments can be determined more precisely during the geotechnical review conducted during preparation of the PMP. If it is determined that only Quaternary young alluvial fan deposits (low paleontological potential), Quaternary young landslide deposits (low paleontological potential), or artificial fill (low paleontological potential) is impacted, monitoring and spot checking should be reduced or halted at the direction of the Principal Paleontologist. Quaternary young alluvial fan, wash, and landslide sediments and artificial fill should not be monitored. However, any potential fossils in these sediments that are unearthed during construction should be evaluated by the Principal Paleontologist as described in the PMP.	Caltrans Archaeologist, Caltrans Project Engineer, and Resident Engineer	During construction and post construction (if necessary)							
Hazardous \	Naste/Materials		1			1	•	1		
PF-HAZ-1	An ADL survey consisting of the collection of shallow subsurface soil samples should be conducted within the project limits, adjacent to the current right-of-way, by a certified specialist during the PS&E phase. The survey is required to determine if special handling is required pursuant to Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils effective July 1, 2016, or as otherwise updated. ADL sampling should be completed for incorporation into the construction bid documents.	Caltrans Project Engineer, Certified Specialist	During PS&E							
PF-HAZ-2	Testing and removal requirements for yellow striping should be conducted in accordance with Caltrans Construction Manual Chapter 7-107E and by a certified specialist during the next phase of the project (PS&E).	Caltrans Project Engineer, Certified Specialist	During PS&E							
PF-HAZ-3	If demolition or modification of any structure is required, a comprehensive lead-based paint (LBP) survey and LBP survey shall be completed prior to demolition of any structures. The surveys should be conducted by a certified specialist during the next phase of the project (PS&E). If asbestos-containing materials	Caltrans Project Engineer, Certified Specialist	During PS&E and construction (if necessary)							

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Environ Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	(ACMs) are identified during an ACM survey, ACMs should be abated in accordance with State and federal laws prior to demolition.									
PF-HAZ-4	Should such materials be encountered during construction, construction activities would be stopped; and further investigation would be completed in accordance with Caltrans Construction Manual for discovery of unknown contamination.	Caltrans Project Engineer, Certified Specialist	During construction							
HAZ-1	If it is determined that disturbance of or within the vicinity of the hazardous materials pipelines is required, additional assessment may be warranted. During the Plans, Specifications, and Estimates (PS&E) phase, the owner of the HVL product pipeline will be contacted to evaluate potential design impacts at that time. All activities will be conducted in accordance with the DOD Final Pipeline Construction and Repair Requirements Manual.	Caltrans Project Engineer	During PS&E							
HAZ-2	If it is determined that ground disturbance within the Southern Pacific Railroad right-of-way is required, additional assessment may be warranted to identify contaminants and potential hazards.	Caltrans Project Engineer	During PS&E							
Air Quality										
PF-AQ-1	The construction contractor must comply with the Caltrans' Standard Specifications in Section 14-9 (2015). Section 14-9-02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.	Caltrans Resident Engineer	During PS&E and construction							
PF-AQ-2	Water or dust palliative will be applied to the site and equipment as often as necessary to control fugitive dust emissions	Caltrans Resident Engineer	During construction							
PF-AQ-3	Soil binder will be spread on any unpaved roads used for construction purposes, and on all project construction parking areas.	Caltrans Resident Engineer	During construction							
PF-AQ-4	Trucks will be washed as they leave the right-of-way as necessary to control fugitive dust emissions.	Caltrans Resident Engineer	During construction							
PF-AQ-5	Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low sulfur fuel as required by California Code of Regulations Title 17, Section 93114.	Caltrans Resident Engineer	During construction							

		Responsible		NSSP	Action(s) taken to	Mea Com	asure pleted		Environ Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
PF-AQ-6	A dust control plan will be developed documenting sprinkling, temporary paving, speed limits, and timely revegetation of disturbed slopes as needed to minimize construction impacts to existing communities.	Caltrans Resident Engineer	During PS&E and construction							
PF-AQ-7	Equipment and materials storage sites will be located as far away from residential and park uses as practicable. Construction areas will be kept clean and orderly.	Caltrans Resident Engineer	During construction							
PF-AQ-8	Environmentally Sensitive Area-like areas or their equivalent will be established near sensitive air receptors. Within these areas, construction activities involving the extended idling of diesel equipment or vehicles will be prohibited, to the extent feasible.	Caltrans Resident Engineer	During PS&E and construction							
PF-AQ-9	Track-out reduction measures, such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic, will be used.	Caltrans Resident Engineer	During construction							
PF-AQ-10	All transported loads of soils and wet materials will be covered before transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to minimize emission of dust (particulate matter) during transportation.	Caltrans Resident Engineer	During construction							
PF-AQ-11	Dust and mud that are deposited on paved, public roads due to construction activity and traffic will be promptly and regularly removed to reduce particulate matter emissions.	Caltrans Resident Engineer	During construction							
PF-AQ-12	To the extent feasible, construction traffic will be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.	Caltrans Resident Engineer	Prior to and during construction							
PF-AQ-13	Mulch will be installed or vegetation planted as soon as practical after grading to reduce windblown particulate in the area.	Caltrans Resident Engineer	During construction							
Noise and V	ibration									
PF-N-1	The control of noise from construction activities will conform to the California Department of Transportation (Caltrans) Standard Specifications, Section 14-8.02, "Noise Control." The nighttime noise level from the Contractor's operations, between the hours of 9:00 p.m. and 6:00 a.m., will not exceed 86 A-weighted decibels (dBA) one-hour A-weighted equivalent continuous sound level (Leq(h)) at a distance of 50 feet. In addition, the Contractor would	Caltrans Project Engineer/Caltrans Resident Engineer	During PS&E and construction							

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Environ Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	equip all internal combustion engines with a manufacturer- recommended muffler and will not operate any internal combustion engine on the job site without the appropriate muffler.									
Wetland and	I Other Waters		1			1				
PF-BIO-1	 Dewatering/Water Diversion (NCCP/HCP Required) Construction activities in special aquatic resources will be restricted to the dry season (June 1 through October 15) when possible. However, open or flowing water may be present during construction. If construction occurs where there is open or flowing water, a strategy that is approved by the resource agencies (e.g., USACOE, CDFW's Lake and Streambed Alteration Program, and RWQCB), such as the creation of cofferdams, will be used to dewater or divert water from the work area. If cofferdams are constructed, implementation of the following cofferdam or water diversion measures is recommended to avoid and lessen aquatic resources impacts during construction: The cofferdams, filter fabric, and corrugated steel pipe are to be removed from the creek bed after completion of the project. The timing of work within all channelized waters is to be coordinated with the regulatory agencies. The cofferdam is to be placed upstream of the work area to direct base flows through an appropriately sized diversion pipe. The diversion pipe will extend through the construction site area, where possible, and outlet through a sandbag dam at the downstream end. Sediment catch basins immediately below the construction to prevent silt- and sediment-laden water from entering the mainstream flow. Accumulated sediments will be periodically 	Caltrans Resident Engineer	During construction							
PF-BIO-2	 removed from the catch basins. PF-BIO-2 Stormwater and Water Quality Best Management Practices (NCCP/HCP Required) Silt Fence. A silt fence is made of a filter fabric that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains sediment-laden water, promoting sedimentation behind the fance 	OCTA HCP/NCCP Manager/Caltrans Project Engineer/Caltrans Resident Engineer	During PS&E, prior to construction, during construction, and post- construction							

		Pagnangibla		NCCD	Action(c) taken to	Mea Com	asure pleted		Environ Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	 Fiber Rolls. A fiber roll consists of straw, coir, or other biodegradable materials bound into a tight tubular roll and wrapped by netting, which can be photodegradable or natural. Fiber rolls with plastic netting that poses a wildlife entanglement hazard will not be used. Fiber rolls used for erosion control will be certified as free of noxious weed seed. When fiber rolls are placed at the toe and on the face of slopes along contours, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff. By interrupting the length of a slope, fiber rolls can also reduce sheet and rill erosion until vegetation is established. 									
	 Gravel Bag Berms. A series of gravel-filled bags are placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out and release runoff slowly as sheet flow, preventing erosion. 									
	 Preservation of Existing Vegetation. Carefully planned preservation of existing vegetation minimizes the potential removal or injury to existing trees, vines, shrubs, and grasses that protect soil from erosion. 									
	 Stockpile Management. Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, paving materials such as Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, aggregate subbase or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure-treated wood. 									
	 Vehicle and Equipment Maintenance. Contamination of stormwater resulting from vehicle and equipment maintenance can be prevented or reduced by running a "dry and clean site." The best option would be to perform maintenance activities at an offsite facility. If this option is not available then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately. Employees and subcontractors must be trained in proper procedures. 									
	As a covered project under the NCCP/HCP, the proposed Project will implement the Caltrans State Storm Water Management Plan (SWMP) and will provide guidance for compliance with the NPDES Permit requirement for discharge. As part of the Project									

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Environ Comp	imental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	Delivery Stormwater Management Program described in the SWMP, selected Construction Site, Design Pollution Prevention, and Treatment BMPs would be incorporated into the proposed Project. Compliance with the standard requirements of the SWMP for potential short-term (during construction) and long-term (post construction) impacts would avoid or minimize potential substantial impacts on water quality and stormwater runoff. Conformance with the SWMP will include the following:									
	 Covered freeway improvement projects will comply with the provisions of the Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ, NPDES No. CAS00003) and the NPDES General Permit, WDRs for Discharges of Storm Water Runoff Associated with Construction Activities (Order No. 2009-0009- DWQ, NPDES No. CAS000002), and any subsequent permit in effect at the time of construction. 									
	 A Storm Water Pollution Prevention Plan (SWPPP) will be prepared and implemented to address all construction-related activities, equipment, and materials that have the potential to affect water quality. The SWPPP will identify the sources of pollutants that may affect the quality of stormwater and include the Construction Site BMPs to control pollutants, such as sediment control, catch basin inlet protection, construction materials management, and non-stormwater BMPs. All Construction Site BMPs will follow the latest edition of the Storm Water Quality Handbooks, Project Planning and Design Guide to control and minimize the impacts of construction and construction-related activities, material, and pollutants on the watershed. These include, but are not limited to temporary sediment control, temporary soil stabilization, scheduling, waste management, materials handling, and other non- stormwater BMPs. 									
	 Caltrans-approved treatment BMPs will be implemented to the MEP consistent with the requirements of the NPDES Permit, Statewide Storm Water Permit, and WDRs for Caltrans Properties, Facilities, and Activities (Order No. 2012-0011- DWQ, NPDES No. CAS000003). Treatment BMPs will include, for example, biofiltration strips/swales, infiltration basins, detention devices, dry weather flow diversion, Gross Solids Removal Devices (GSRDs), media filters, and wet basins. Final 									

						Me	asure		Environ	mental
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Responsible Branch/Staff	Timing/Phasing	NSSP Req.	Action(s) taken to Implement/Remarks	Date	Initials	Remarks	Yes	No
	determination regarding the selection of treatment BMPs will occur during the design phase.				-			Remarks		
	 Design Pollution Prevention BMPs will be implemented, such as preservation of existing vegetation, slope/surface protection systems (permanent soil stabilization), concentrated flow conveyance systems such as ditches, berms, dikes and swales, oversize drains, flared end sections, and outlet protection/velocity dissipation devices. 									
	 Construction site dewatering must conform to the General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (de minimus) Threat to Water Quality (Order No R8-2009-0003, National Pollutant Discharge Elimination System No. CAG998001), and any subsequent updates to this permit at the time of construction. Dewatering BMPs must be used to control sediments and pollutants, and the discharges must comply with the WDRs issued by the Santa Ana RWQCB. 									
	Pursuant to the OCTA/Caltrans LOP Procedures the following minimization measures would be implemented at the six drainages shown above.									
	• Soil Erosion and Siltation Controls. During project implementation, appropriate erosion and siltation controls such as siltation or turbidity curtains, sedimentation basins, and/or hay bales, or other means designated to minimize turbidity in the watercourse to prevent exceedances of background levels existing at the time of project implementation, shall be used and maintained by OCTA and/or Caltrans in effective operating condition. Projects are exempted from implementing controls if site conditions preclude their use, or if site conditions are such that the proposed work would not increase turbidity levels above the background level existing at the time of the work. All exposed soil and other fills, as well as any work below the ordinary high water mark, must be stabilized at the earliest practicable date to preclude additional damage to the project area through erosion or siltation and no later than November of the year the work is conducted to avoid erosion from storm events.									
	 Equipment. If a personnel would not be subjected to additional, potentially hazardous conditions, heavy equipment working in or crossing wetlands must be placed on temporary construction 									

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Enviror Comp	imental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	mats (timber, steel, geotextile, rubber, etc.), or other measures must be taken to minimize soil disturbances such as using low- pressure equipment. Temporary construction mats shall be removed promptly after construction is completed.									
	• Suitable Material. No discharge of dredged or fill material into waters of the U.S. may consist of unsuitable materials (e.g., trash, debris, car bodies, asphalt, etc.), and material discharged must be free from toxic pollutants in toxic amounts (see section 307 of the CWA).									
	• Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. To the maximum extent practicable, the activity must provide for the retention of excess flows from the site and for the maintenance of surface flow rates from the site similar to pre-project conditions, while not increasing water flows from the project site, relocating water, or redirecting water flow beyond pre-project conditions unless it benefits the aquatic environment (e.g., stream restoration activities).									
	 Removal of Temporary Fills and Native Revegetation of Temporary Impact Areas. Any temporary fills must be removed in their entirety and the affected areas must be returned to their pre-construction conditions, including any native riparian and/or wetland vegetation, at the conclusion of the project. To reduce the potential for erosion and to facilitate the recovery of the temporarily affected areas, the Permittee(s) shall hydroseed and re-vegetate the disturbed portions of the earthen stream banks and bottom and floodplain, as appropriate, with native, non-invasive species. Woody riparian vegetation shall be revegetated with container plantings unless other methods are coordinated with and approved by the Corps Regulatory Division. The Permittee(s) shall submit the proposed native planting palette and planting plan for review and approval by the Corps Regulatory. Division at least 30 days prior to initiation 									

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Environ Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	of construction. The Permittee(s)shall ensure the affected areas (disturbed stream channel bottoms and banks and hydroseeded/replanted areas) are maintained and monitored for a period of two years, minimum, after completing the revegetation activities, such that less than 10 percent (absolute cover) of the areas disturbed by the project are vegetated by non-native and invasive plant species. For each project aquatic feature, the Permittee(s) shall submit to the Corps Regulatory Division a memorandum by December 15th after completion of the minimum two-year maintenance and monitoring period. The memo shall indicate for each project crossing/aquatic impact area, when temporary construction areas were recontoured to preconstruction conditions, when native planting/seeding was completed, the species and percent cover (absolute) of invasive and/or non-invasive plant species that occur onsite each year prior to treatment, and when and how many/the extent of invasive and/or non-invasive plant species that were removed that year.									
	Implementation of the native revegetation of temporary impact areas shall commence immediately following completion of construction or, with written approval from the Corps Regulatory Division, at the beginning of the next growing season after project completion. A delay in native planting to take advantage of the appropriate season should be considered in the application phase to use established LOP procedures in order for appropriate mitigation to be considered by the Corps Regulatory Division. An increase in delay after the LOP has been issued may require a modification to the mitigation requirements and should be coordinated with Corps Regulatory Division to avoid noncompliance action. If native re-vegetation cannot start due to seasonal conflicts (e.g., impacts occurring in late fall/early winter shall not be revegetated until seasonal conditions are conducive to re-vegetation), exposed earth surfaces shall be stabilized immediately with jute-netting, straw matting, or other applicable best management practice to minimize any erosion from wind or water. Native revegetation of temporary impact areas shall be completed within 12 months of initial occurrence of project impacts to waters of the U.S. Any temporal loss of riparian/wetland/stream function caused by delays beyond the 12 months in implementation of native revegetation of temporary impact areas shall be mitigated in-kind through									

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Enviror Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
Measure #	Avoidance, Minimization, and/or Mitigation Measure riparian/wetland/stream establishment, re-establishment, rehabilitation, and/or enhancement at a mitigation ratio as determined by the Corps Regulatory Division in accordance with the latest Standard Operating Procedure for Determination of Mitigation Ratios (i.e., current instructions require that the mitigation ratio is increased 0.05:1 for every month of delay). In the event that the Permittee(s) is wholly or partly prevented from revegetating temporary impact areas within the above time frame (causing temporal losses due to delays) because of unforeseeable circumstances or causes beyond reasonable control, and without the fault or negligence of the Construction Lead, including but not limited to natural disasters (e.g., earthquakes, flooding, etc.), OCTA/Caltrans may be excused by such unforeseeable cause(s) from the additional 0.05:1 per each month of delay requirement with Corps Regulatory Division approval. Any on-site native revegetation deemed infeasible as a result of such unforeseeable causes(s) will be considered a permanent impact, and will be mitigated accordingly. Additional exotic species management is required within the SAMP areas to prevent the establishment of invasive exotic vegetation. (See Special Condition 14). If the Corps Regulatory Division determines native revegetation efforts are not resulting in successful recovery of comparable, pre-project aquatic resource functions and services at any temporary impact area, the Corps may require OCTA and/or Caltrans to implement additional native revegetation activities in the treated area. and/or implement additional mitigation activities in	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	outside the treated area to ensure aquatic resource losses are minimized or offset adequately.									
	 Preventive Measures. Measures must be adopted to prevent potential pollutants from entering the on-site watercourse(s). Within the project area, construction materials, and debris, including fuels, oil, and other liquid substances shall be stored in a manner as to prevent any runoff from entering aquatic areas. 									
	• Staging of Equipment. Staging, storage, fueling, and maintenance of equipment must be located or occur sufficiently outside of all the water bodies so that any potential spilled materials will not be able to enter any waterway or other body of water.									

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Environ Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	 Fencing of Project Limits. The Permittee(s) shall clearly mark the limits of the workspace with flagging or similar means to ensure mechanized equipment does not enter preserved/avoided waters of the U.S. and riparian wetland/habitat areas shown on a project-specific figure attached to the LOP. Adverse impacts to waters of the U.S. beyond the Corps Regulatory Division approved construction footprint are not authorized. Such impacts could result in permit suspension and revocation, administrative, civil, or criminal penalties, and/or substantial, additional, compensatory mitigation requirements 									
	 Avoidance of Breeding Season. With regard to federally listed avian species, avoidance of breeding season requirements shall be as described in Special Condition 20 below. For all other species, initial vegetation clearing in waters of the U.S. must occur between September 15 and March 15, which is outside the breeding season. Work in waters of the U.S. may occur during the breeding season between March 15 and September 15 if bird surveys indicate the absence of any nesting birds within a 50-foot radius. 									
	 Site Inspections. Corps personnel shall be allowed to inspect the site at any time during and immediately after project implementation. In addition, compliance inspections of all compensatory mitigation sites shall be allowed at any time. 									
	 Posting of Conditions. A copy of the LOP terms and conditions shall be included in all bid packages for the project and shall be available at the work site at all times during periods of work and must be presented upon request by any Corps or other agency personnel with a reasonable reason for making such a request. 									
	 Post-Project Report. Within 45 days of completion of impacts to waters of the U.S., as-built drawings with an overlay of waters of the U.S. that were impacted and avoided must be submitted to the Corps Regulatory Division. Post-project photographs, which document compliance with permit conditions, must also be provided. Maps and drawing submitted to the Corps Regulatory Division must comply with the Final Map and Drawing Standards for the South Pacific Division Regulatory Program, dated February 10, 2016 (http://www.spd.USACOE.army.mil/Missions/Regulatory/Public- 									

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Enviror Comp	nmental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	 Avoidance, Winimization, and/or Wingation Weasure Notices-andReferences/Article/651327/updated-map-and- drawing-standards/). Water Quality. OCTA/Caltrans must obtain an individual project-specific Section 401 water quality certification from the California State Water Resource Control Board or the applicable Regional Water Quality Control Board. By Federal law, no Department of the Army permit can be issued until a Section 401 water quality certification has been issued or waived by the State Water Resource Control Board. No Corps- regulated discharges of dredged or fill material into waters of the U.S. may proceed for a particular project until Section 401 water quality certification for that individual project is obtained or otherwise waived and provided to Corps Regulatory Division. Endangered Species. OCTA coordinated with the USFWS and CDFW to complete an NCCP/HCP for the M2 Freeway Program projects, including those proposed to be authorized under the LOP procedures. Even with the NCCP/HCP completed and an ESA section 10 permit issued from the USFWS for impacts to covered species from covered projects, consultation between the Corps Regulatory Division or Caltrans and USFWS shall still occur pursuant to section 7 of the ESA for any "may affect" of federally listed species and/or designated critical habitat, prior to initiation of project construction. Protocol or focused surveys for listed species would be conducted as outlined in the NCCP/HCP, and the Corps Regulatory Division or Caltrans would initiate a streamlined section 7 consultation process with the USFWS for each M2 Freeway Program project that may affect federally listed species and/or designated critical habitat. For project actions that "may affect" federally listed as threatened or endangered species not covered under the NCCP/HCP, the Corps Regulatory Division or Caltrans would initiate formal or informal section 7 consultation on an individual project basis. 	Dranch/Stan		Keq.				Remarks		
1	continued existence of a federally listed as threatened or									

						Me	asure		Environ	mental
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Responsible Branch/Staff	Timing/Phasing	NSSP Reg.	Action(s) taken to	Date	Initials	Domorko	Yes	No
	 endangered species or a species proposed for such designation, as identified under the ESA, or which will destroy or adversely modify the critical habitat of such species. OCTA and/or Caltrans shall not begin work on the proposed activity until notified by the Corps Regulatory Division that the requirements of the ESA have been satisfied and that the activity is authorized. Where applicable, Caltrans, as assigned by Federal 							Keinarks		
	Highway Administration (FHWA), under the National Environmental Policy Act (NEPA) Assignment Memorandum of Understanding, should follow their own procedures for complying with the requirements of the ESA. Caltrans must provide the Corps Regulatory Division with the appropriate documentation to demonstrate compliance with those requirements.									
	 OCTA and/or Caltrans shall notify the Corps Regulatory Division if any federally listed species or designated critical habitat (or proposed for such listing or designation) might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the proposed activity until notified by the Corps Regulatory Division that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that "may affect" federally listed endangered or threatened species or designated critical habitat, the proposed activity is authorized. 									
	nabilitat, the pre-construction notification must include the name(s) of the federally listed as endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. The Corps Regulatory Division will determine whether the proposed activity "may affect" or will have "no effect" on federally listed species and/or designated critical habitat, and will notify									
	The OCTA and/or Caltrans of the Corps Regulatory Division's determination within 45 days of receipt of a complete LOP application/preconstruction notification. In cases where the OCTA and/or Caltrans has identified federally listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps Regulatory Division, the applicant shall not begin work until the Corps Regulatory Division has									

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Enviror Comp	nmental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	provided notification the proposed activities will have "no effect" on federally listed species or critical habitat, or until the LOP has been issued.									
	 As a result of formal or informal consultation with the USFWS, the Corps Regulatory Division may add species- specific endangered/threatened species conditions to the LOP. 									
	Authorization of an activity by a Corps permit does not authorize the "take" of a federally listed as threatened or endangered species or the adverse modification of designated critical habitat of such species as defined under the ESA. In the absence of separate authorization (e.g., an ESA section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS, both lethal and nonlethal "takes" of protected species are in violation of the ESA. Information on the location of federally listed as threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at http://www.fws.gov/carlsbad/ and http://www.nmfs.noaa.gov/pr/species/esa/index.htm, respectively.									
	– Historic Properties.									
	 In cases where the Corps Regulatory Division determines that the activity "may affect" properties listed, or eligible for listing, on the National Register of Historic Places (NRHP), the activity is not authorized, until the requirements of section 106 of the National Historic Preservation Act (NHPA), including tribal consultation as appropriate, have been satisfied. 									
	 Where applicable, Caltrans, as assigned by FHWA under the NEPA Assignment Memorandum of Understanding, should follow their own procedures for complying with the requirements of section 106 of the NHPA. Caltrans must provide the Corps Regulatory Division with the appropriate documentation to demonstrate compliance with those requirements. 									
	 OCTA and/or Caltrans must submit with their application information on historic properties that might be affected by the proposed work or include a vicinity map indicating 									

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Environ Compl	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	the location of the historic properties or the potential for the presence of historic properties listed, or eligible for listing, on the NRHP. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO), as appropriate, and the NRHP (see 33 C.F.R. §330.4(g)). The Corps shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the Corps shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where OCTA and/or Caltrans has identified historic properties that the activity may have the potential to cause effects and so notified the Corps, OCTA and/or Caltrans shall not begin the activity until notified by the Corps Regulatory Division either that the activity has no potential to cause effects or that consultation under section 106 of the NHPA has been completed.									
	 Section 106 consultation is not required when the Corps determines that the proposed regulated activity does not have the potential to cause effects on historic properties (see 36 C.F.R. §800.3(a)). If NHPA section 106 consultation is required to occur, the Corps Regulatory Division will notify OCTA and/or Caltrans that work may not begin until section 106 consultation is completed. 									
	 OCTA and/or Caltrans should be aware that section 110(k) of the NHPA [16 U.S.C. 470h-2(k)] prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances 									

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Enviror Comp	nmental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, explaining the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts from									
	 the permitted activity on historic properties. Section 106 compliance is required for all on-going short term and long-term maintenance activities within the Agua Chinon, Aliso Creek, and Ferber Ranch Preserve mitigation areas. OCTA/Caltrans shall notify the Corps Regulatory Division at least 90 days prior to any ground-disturbing activities within 100 feet of any known cultural resources. All ground-disturbing activities within 100 feet of known cultural resources shall be avoided within or adjacent to waters of the U.S. unless specifically authorized by the Corps Regulatory Division. 									
	 Transfer of LOPs. If OCTA and/or Caltrans (Permittee(s)) sell(s) the property associated with an LOP, the Permittee(s) may transfer the LOP to the new owner by submitting a letter to the Corps, Los Angeles District, Regulatory Division to validate the transfer. A copy of the LOP and the name and all available contact information, including company name, addresses, telephone numbers, and e-mail address, must be attached to the letter, and the letter must contain the following statement and signature: 									
	 "When the structures or work authorized by this LOP are still in existence at the time the property is transferred, the terms and conditions of this LOP, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this LOP and the associated liabilities associated with compliance with its terms and conditions, the transferee must sign and date below." Compliance Certification. Each Permittee who receives an LOP from the Corns Regulatory Division must submit a 									

		Responsible		NSSP	Action(s) taken to	Measure Completed			Environmental Compliance	
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	signed certification regarding the completed work and any required compensatory mitigation within 45 days after completing construction activities. The certification form must be forwarded to the Corps Regulatory Division with the LOP and will include:									
	 A statement that the authorized work was done in accordance with the LOP authorization, including any general or specific conditions; 									
	 A statement that any required compensatory mitigation was completed in accordance with the permit conditions; and 									
	The signature of the Permittee(s) certifying the completion of the work and compensatory mitigation.									
Animal Spe	cies									
BIO-1	BATS	Caltrans Project	During PS&E and							
	Complete preconstruction bat habitat assessment will be conducted to reevaluate the protection status for bat species potentially within the project area. Preconstruction habitat assessment will include the following:	Biologist	construction							
	• A bat roost habitat reassessment and acoustic and emergence bat surveys should be completed throughout the Study Area within one year ahead of project implementation.									
	• At project structures that may provide night roost habitat (Lincoln Avenue Undercrossing, Taft Avenue Undercrossing, Chapman Avenue Undercrossing, and WB SR 22 Separation), determine which species may be present and their approximate number through acoustic monitoring and exit counts.									
	Verify if maternity colonies are present.									
	 Ascertain which species are using project structures for night roosting. 									
	 Determine if special conservation measures may apply based on current regulatory practices, including exclusion measures, if necessary. 									
	• Coordinate with CDFW on the pre-construction habitat assessment and surveys to check with the species occupancy and conservation status at the time of project construction.									

		Responsible	NS	NSSP	Action(s) taken to	Measure Completed			Environmental Compliance	
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	Coordination should include, but not be limited to, (a) the timing of the surveys, (b) reporting of the assessment and survey results, and (c) development of appropriate avoidance and minimization measures.									
BIO-2	MIGRATORY BIRDS	Resident Engineer/ Caltrans Project Biologist	During PS&E and							
	To minimize impacts to potential nesting birds, the proposed Minimization Measure will implement the NCCP/HCP Nesting Bird Policy as follows:		prior to construction							
	 Proposed project activities (including, but not limited to, staging and disturbances to native and non-native vegetation, structures, and substrates) should occur outside the avian breeding season, which generally runs from February 1 to September 30 (as early as January 1 for some birds) to avoid disturbance to breeding birds or destruction of the nest or eggs. Depending on the avian species present, a qualified biologist may determine that a change in the breeding season dates is warranted. If the Construction Lead determines that avoidance of the avian breeding season is not feasible, at least two weeks prior to the initiation of project activities, a qualified biologist with experience in conducting breeding bird surveys will conduct weekly bird surveys to detect presence/absence of native bird species occurring in suitable nesting habitat that is to be directly or indirectly disturbed and (as access to adjacent areas allows) any other such habitat within an appropriate buffer distance should be 300 feet (500 feet for raptors); however, because the covered freeway improvement projects will generally occur along noisy freeways, a buffer distance as low as 100 feet for non-raptors could be appropriate. If a narrow buffer distance is warranted, the Construction Lead will have a qualified biologist identify the appropriate buffer distances for raptors and non-raptors and notify the Wildlife Agencies. The surveys should continue on a weekly basis, with the last survey being conducted no more than three days prior to the initiation of project activities. If a native or nesting bird species is found, the Construction Lead will do one of the following to avoid and minimize impacts on native birds and the nest or eggs of any birds: 									

		Responsible		NSSP Action(s) taken to		Measure Completed			Environ Compl	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	Implement default 300-foot minimum avoidance buffers for all birds and 500-foot minimum avoidance buffers for all raptor species. The breeding habitat/nest site will be fenced and/or flagged in all directions, and this area will not be disturbed until the nest becomes inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, and the young will no longer be impacted by the project.									
	If a narrower buffer distance is determined appropriate by the qualified biologist, the Construction Lead will develop a project-specific Nesting Bird Management Plan. The site- specific nest protection plan will be developed collaboratively with Wildlife Agencies and submitted to the Wildlife Agencies, although the Wildlife Agencies will not be responsible for approving the narrower buffer distance and the Nesting Bird Management Plan. The Plan should include detailed methodologies and definitions to enable a qualified avian biologist to monitor and implement nest-specific buffers based on topography, vegetation, species, and individual bird behavior. This Nesting Bird Management Plan will be supported by a Nest Log that tracks each nest and its outcome. The Nest Log will be submitted to the Wildlife Agencies at the end of each week.									
	 The Construction Lead may propose an alternative plan for avoidance and nesting birds for Wildlife Agencies' review and approval. 									
	 Flagging, stakes, and/or construction fencing should be used to demarcate the inside boundary of the buffer between the project activities and the nest. The Construction Lead personnel, including all contractors working on site, should be instructed on the sensitivity of the area. The Construction Lead will document the results of the recommended protective measures described above to demonstrate compliance with applicable State and federal laws pertaining to the protection of native birds. 									
	The biological monitor will be present on site during all grubbing and clearing of vegetation to ensure that these activities remain within the project footprint (i.e., outside the demarcated buffer) and that the flagging/stakes/fencing is being maintained, and to minimize the likelihood that active nests are abandoned or fail due									

		Responsible		NSSP	Action(s) taken to	Measure Completed			Environ Comp	mental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	to project activities. The biological monitor will send weekly monitoring reports to the OCTA NCCP Administrator during the grubbing and clearing of vegetation and will notify the OCTA NCCP Administrator immediately if project activities take, possess, or needlessly destroy the nest or eggs of any bird as well as birds-of-prey and their nest or eggs. Within 48 hours of damage to an active nest or eggs or observed death or injury of birds protected under State law or the Migratory Bird Treaty Act (MBTA) (which includes, but not is limited to, the birds on the Covered Species list), OCTA will notify the Wildlife Agencies.									
Invasive Spe	ecies									
BIO-3	 INVASIVE SPECIES To minimize impacts associated with the potential to spread invasive plant species, the following environmental control measures have been incorporated into the proposed project, including avoiding the use of invasive plant material during and after construction, a weed abatement program, and litter control, as stated below: Weed Abatement Program. In compliance with Executive Order 13112, and guidance from the Federal Highway Administration (FHWA), the landscaping and erosion control plans included in the project will not use species listed as invasive. A weed abatement program shall be developed for the proposed project and incorporated into the Plans, Specifications, and Estimates (PS&E) package to avoid and/or minimize the importation of non-native plant material during and after construction. At a minimum, the program shall be removed from the proposed project work area. All removed invasive plant material will be disposed of properly in a landfill or other suitable facility. During construction, the Construction Contractor shall inspect and clean construction equipment at the beginning of each day and prior to transporting equipment from one project location to another. During construction, soil and vegetation disturbance will be minimized to the greatest extent feasible. 	Resident Engineer/ Caltrans Project Biologist	During PS&E and construction							

		Responsible		NSSP	Action(s) taken to	Measure Completed			Environmenta Compliance	
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	 During construction, the Construction Contractor shall ensure that all active portions of the construction site are watered a minimum of twice daily, or more often when needed due to dry or windy conditions, to prevent excessive amounts of dust. 									
	 During construction, the Construction Contractor shall ensure that all material stockpiled is sufficiently watered or covered to prevent excessive amounts of dust. During construction, soil, gravel, and rock will be obtained from weed-free sources. 									
	 Only certified weed-free straw, mulch, and/or fiber rolls will be used for erosion control. 									
	 After construction, affected areas adjacent to native vegetation will be revegetated with plant species that are native to the vicinity as approved by the District Biologist. 									
	 After construction, all revegetated areas will avoid the use of species listed on the California Invasive Plant Council (Cal- IPC) California Invasive Plant Inventory that have a High or Moderate rating. 									
	 Erosion control and/or revegetation sites will be monitored after construction to detect and control the introduction/invasion of non-native species. The monitoring period will be determined in consultation with resource agencies. 									
	 Eradication procedures (e.g., spraying and/or hand weeding) will be outlined should an infestation occur; the use of herbicides will be prohibited within and adjacent to native vegetation, except as specifically authorized and monitored by the District Biologist. 									
	 All woody invasive species will be removed from the proposed project limits. 									
	• Best Management Practices During Construction. All equipment maintenance, staging, and dispensing of fuel, oil, or any other such activities will occur in developed or designated nonsensitive upland habitat areas. The designated upland areas will be located in such a manner as to prevent any spill runoff from entering waters of the United States.									

		Responsible	NSSP	Action(s) taken to	Measure Completed			Environmental Compliance		
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	• Trash Control . To avoid attacking predators of Covered Species and other sensitive species, the proposed project site will be kept as clean of debris as possible. All food-related trash items will be enclosed in sealed containers and regularly removed from the site(s).									
	Invasive Species Control . Invasive species will be removed from the project work area and controlled during construction. The use of known invasive plant species (i.e., plant species listed in California Invasive Plant Council's [Cal-IPC's] California Invasive Plant Inventory with a High or Moderate rating) will be prohibited for construction, revegetation, and landscaping activities. Project measures will be included to ensure invasive plant material is not spread from the project site to other areas by disposal off site or by tracking seed on equipment, clothing, and shoes. Equipment/material imported from an area of invasive plants must be identified and measures implemented to prevent importation and spreading of non-native plant material within the project site. All construction equipment will be cleaned with water to remove dirt, seeds, vegetative material, or other debris that could contain or hold seeds of noxious weeds before arriving to and leaving the project site. Eradication strategies (i.e., weed abatement programs) will be employed should an invasion occur during construction.									
Climate Cha	nge (Greenhouse Gas Emissions)									
PF-GHG-1	Landscaping reduces surface warming and, through photosynthesis, decreases carbon dioxide (CO2). The final design plans will provide landscaping where necessary within the corridor to provide aesthetic treatment, replacement planting, or mitigation planting for the project. The landscape planting would help offset project CO2 emissions.	Caltrans Project Engineer	During PS&E							
PF-GHG-2	The final design plans will incorporate the use of energy-efficient lighting, such as light-emitting diode (LED) traffic signals. LED bulbs consume 10 percent of the electricity of traditional lights, which will also help reduce the project's CO2 emissions.	Caltrans Project Engineer	During PS&E							
PF-GHG-3	During construction, the Construction Contractor will comply with Caltrans Standard Specification Provisions that restrict idling time for lane closure during construction to 10 minutes in each direction. In addition, the Construction Contractor must comply with Title 13, California Code of Regulations Section 2449(d)(3),	Caltrans Resident Engineer	During construction							
		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Environ Comp	mental liance
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Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	which was adopted by the California Air Resources Board on June 15, 2008. That regulation restricts idling of construction vehicles to no longer than five consecutive minutes. Compliance with this regulation reduces harmful emissions from diesel- powered construction vehicles.									
PF-GHG-4	The project will incorporate the Best Available Control Technologies (BACT) as approved by Caltrans for projects during final design/construction (2030- 2032) as applicable:	Caltrans Project Engineer	During PS&E and construction							
	 Use cement blended with the maximum feasible amount of flash or other materials (i.e., limestone) that reduce GHG emission from cement production. 									
	 Use lighter-colored pavement where feasible to increase albedo. 									
	Use recycled water or grey water for fugitive dust control.									
	 Employ energy- and fuel-efficient vehicles and equipment, zero- and/or near-zero emission technologies where available. 									
	Encourage ride-sharing and carpooling for construction crews.									
	 Use asphalt alternatives (i.e., rubberized hot-mix asphalt) to pave roadways. 									
	 Reduce construction waste and maximize the use of recycled materials (reduces consumption of raw materials, reduces landfill waste, and encourages cost savings). 									
	 Incorporate measures to reduce consumption of potable water. Encourage improved fuel efficiency from construction equipment (examples provided below): 									
	 Maintain equipment in proper tune and working condition 									
	 Right size equipment for the job 									
	 Use equipment with new technologies Already included in GHG 4. 									
	 Construction Environmental Training: Supplement existing training with information regarding methods to reduce GHG emissions related to construction. 									
	 Encourage the use of alternative bridge construction (ABC) (reduce construction windows, use of more precast elements that in turn reduce need for additional falsework, forms, bracing, etc.) 									

		Responsible		NSSP	Action(s) taken to	Me Com	asure pleted		Enviror Comp	imental liance
Measure #	Avoidance, Minimization, and/or Mitigation Measure	Branch/Staff	Timing/Phasing	Req.	Implement/Remarks	Date	Initials	Remarks	Yes	No
	 Maximize use of recycled materials (e.g., tire rubber). Salvage large removed trees for lumber or similar on-site beneficial uses other than standard wood-chipping. (e.g., use in roadside landscape projects or green infrastructure components). On-site recycling of existing project features is encouraged: (e.g., MBGR, light standards, sub-base granular material, or native material that meets Caltrans specifications for incorporation into new work). Lower the rolling resistance of highway surfaces as much as possible while still maintaining design and safety standards. 	Branch/Stan	Tining/Filasing	<u>ке</u> ц.				Remarks	163	
	 Earthwork Balance: Reduce the need for transport of earthen materials by balancing cut and fill quantities. Cold in-place recycling: This pavement rehabilitation treatment is used on low traffic-volume, hot mix asphalt (HMA) pavements to extend the pavement service life and to recycle natural resources. The treatment also reduces emissions and energy use associated with processing and hauling these materials. Reduce need for electric lighting by using ultra-reflective sign materials that are illuminated by headlights. 									

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Appendix D: References

- Association of Environmental Professionals (AEP). 2007 (March 5). Recommendations by the AEP on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents. Available at: <u>http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=2A103A1019FF4D7EB5409FB</u> <u>1701C1437?doi=10.1.1.512.9243&rep=rep1&type=pdf</u>.
- Bruce G. Baldwin, Douglas Goldman, David J Keil, Robert Patterson, Thomas J. Rosatti, and Dieter Wilken. 2012. Jepson Manual: Vascular Plants of California, Second Edition.
- Barth, Matthew, and Kanok Boriboonsomsin. 2009 (August). Energy and emissions impacts of a freeway-based dynamic eco-driving system. Transportation Research Part D: Transport and Environment. Volume 14, Issue 6, Pages 400–410.
- Bryant, W.A., and E.W. Hart. 2007. Fault-Rupture Hazard Zones in California. Department of Conservation, California Geological Survey, Special Publication 42, Interim Revision 7. Sacramento, CA: California Geological Survey.
- California Air Resources Board (ARB). 2017 (June). Greenhouse Gas Emission Inventory 2017 Edition: Years 2000-2015. Available at: <u>https://www.arb.ca.gov/cc/inventory/pubs/htm</u>.

——. 2017 (November). California's 2017 Climate Change Scoping Plan. Available at: <u>https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf</u>.

- ------. 2018 (July 11). California Greenhouse Gas Emission Inventory 2018 Edition. Available at: https://www.arb.ca.gov/cc/inventory/data/data.htm.
- California Department of Conservation. 2018a. Division of Oil, Gas, and Geothermal Resources (DOGGR), Well Finder. Available at: <u>https://maps.conservation.ca.gov/doggr/wellfinder/</u>.
- 2018b (accessed March 2019). Farmland Mapping and Monitoring Program (FMMP): Orange County Important Farmland Data Availability. <u>https://www.conservation.ca.gov/dlrp/fmmp/Pages/Orange.aspx</u>.
- California Department of Fish and Wildlife (CDFW), California Natural Diversity Database (CNDDB). 2018. Record search for the Tustin, California and Orange, California 7.5-minute quadrangles. Accessed May 18, 2018. Sacramento, CA: CDFW.

—. California Native Plant Society (CNPS). Inventory of Rare and Endangered Plants. Information for the Tustin, California and Orange, California 7.5-minute U.S. Geological Survey (USGS) topographic quadrangles. Sacramento, CA: CNPS.

- California Department of Forestry and Fire Protection (Cal Fire). 2007 (adopted November 7). Orange County Fire Hazard Severity Zones in the State Responsibility Area (SRA). Available at: <u>http://www.fire.ca.gov/fire_prevention/fhsz_maps_orange</u>. Accessed April 15, 2019.
 - . 2011 (October). Orange County Very High Fire Hazard Severity Zones in the Local Responsibility Area (LRA) as recommended by Cal Fire. Available at: <u>http://www.fire.ca.gov/fire_prevention/fhsz_maps_orange.</u> Accessed April 15, 2019.
- California Department of Transportation (Caltrans). 1997 (December). Transportation Project-Level Carbon Monoxide Protocol (CO Protocol). Available at: <u>http://www.dot.ca.gov/env/air/co-protocol.html</u>.
- -------. 2002 (December). Caltrans Guide for the Preparation of Traffic Impact Studies. Available at: http://www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf.
- ———. 2005. Standard Environmental Reference (SER) Guidance for Preparers of Cumulative Impact Analysis.

 2011a. Tract Housing in California, 1945–1973: A Context for National Register Evaluations. Accessed March 6, 2018. Available at: http://www.dot.ca.gov/ser/downloads/cultural/tract_housing_in_ca_1945-1973.pdf.

- ———. 2011b (May). Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects. Available at: http:// www.dot.ca.gov/hq/env/noise/pub/ca_tnap_may2011.pdf. Accessed November 2018.
- . 2012a (June). *Geotechnical Services Design Manual*. Updated December 2016.
- ———. 2012b (August). *Near-Road Nitrogen Dioxide Assessment*. Final report, CTAQ-RT-12-270.09.02.
- . 2013a (April). Seismic Design Criteria, Version 1.7.
- 2013b (April). Caltrans Activities to Address Climate Change. Available at: <u>www.dot.ca.gov/hq/tpp/offices/orip/climate_change/documents/Caltrans_ClimateChange</u> <u>Rprt-Final_April_2013.pdf</u>.
 - -----. 2013c (September). Technical Noise Supplement to the Traffic Noise Analysis Protocol. Available at: <u>http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013A.pdf</u>.

- 2014b. CT-EMFAC2014, Version 6.0. Available at: <u>http://www.dot.ca.gov/env/air/files/ct-emfac2014-v6.0.zip</u>.
- - ——. 2015b (March). Strategic Management Plan 2015-2020. Available at: <u>http://www.dot.ca.gov/perf/library/pdf/Caltrans_Strategic_Mgmt_Plan_033015.pdf</u>.
- 2015c (October 28). Air Pollution Standards, Standard Environmental Reference. Available at: http://www.dot.co.gov/cor/downloads/AirOuslityConformity/cg_updates_air_polluti/

http://www.dot.ca.gov/ser/downloads/AirQualityConformity/aq_updates_air_pollution_st ds_tbl.docx. Accessed January 15, 2019.

- 2015d. Standard Specifications, Section 14: Environmental Stewardship. Available at: <u>http://ppmoe.dot.ca.gov/hq/esc/oe/construction_contract_standards/std_specs/2015_StdSpecs/2015_StdSpecs.pdf</u>.
- 2016a (Last updated March 25, 2016). Caltrans Standard Environmental Reference, Chapter 8-Paleontology. Available online at: <u>http://www.dot.ca.gov/ser/vol1/sec3/physical/Ch08Paleo/chap08paleo.htm</u>.
- . 2016c (July 20). Statewide Stormwater Management Plan.
- ——. 2016d (December). Highway Design Manual.
- ——. 2017b. Construction Manual Chapter 7-107E.

 - ——. 2017e (July). Storm Water Quality Handbooks, Project Planning and Design Guide for implementing Design Pollution Prevention and Treatment BMPs. Available at: <u>http://www.dot.ca.gov/design/hsd/ppdg/PPDG-Final_2017-07.pdf</u>.

- ———. 2018a. Highway Design Manual, Chapter 80, Application of Design Standards.
- . 2018b. Revised District Preliminary Geotechnical Report.
- California Department of Water Resources (DWR). 2004 (February 27). Bulletin 118, Coastal Plain of Orange County Groundwater Basin.
- California Energy Commission (CEC). 2018. *Toward a Clean Energy Future, 2018 Integrated Energy Policy Report Update* (IERP). Volume I Adopted August 1, 2018. <u>https://www.energy.ca.gov/2018_energypolicy/</u>.
- California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). 2016 (June). Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils. Available at: <u>http://www.dot.ca.gov/env/hazwaste/docs/dtsc-ct-adlfinal-</u><u>063016.pdf</u>.
- California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). Accessed March 2019. Envirostor Website. http://www.envirostor.dtsc.ca.gov.

California Geological Survey (CGS). 1998. California Seismic Hazard Zone Map.

——. 2001. Seismic Hazard Zone Report for the Tustin 7.5-minute Quadrangle, Orange County, California, Plate 1.2.

- California Invasive Plant Council (Cal-IPC). California Invasive Plant Inventory. Available at: <u>https://www.cal-ipc.org/plants/inventory/</u>.
- California Natural Resources Agency. 2009 (December). 2009 California Climate Adaptation Strategy. Available at: http://resources.ca.gov/docs/climate/Statewide_Adaptation_Strategy.pdf.
- California State Water Resources Control Board. 2018. *Final 2014/2016 California Integrated Report* (Clean Water Act Section 303(d) List / 305(b) Report).

City of Anaheim. 2004 (May). City of Anaheim General Plan Introduction.

City of Orange. 2007 (August). Traffic Impact Analysis Guidelines.

- City of Santa Ana. 1998 (February 2). City of Santa Ana General Plan: Circulation Element and Land Use Element. Reformatted January 2010.
- ——. 2014 (February). City of Santa Ana General Plan, Housing Element.
 - ------. 2015 (December). City of Santa Ana Climate Action Plan. Available at: <u>https://www.santa-ana.org/pw/santa-ana-green/climate-action-plan</u>
- ———. 2017. Facts and Figures. Available at: <u>http://www.ci.santa-ana.ca.us/facts/</u>. Accessed May 17, 2017.
- City of Tustin. 2013 (October). City of Tustin General Plan, Housing Element.
- ———. 2017 (July). City of Tustin General Plan: Circulation Element and Conservation/Open Space/Recreation Element.
- Climate Change Adaptation Task Force. 2011 (October 28). Climate Change Resilience. Produced by the Council on Environmental Quality (CEQ), Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA). Available at: https://obamawhitehouse.archives.gov/administration/eop/ceq/initiatives/resilience.
- County of Orange. 2005. Orange County General Plan. <u>https://www.ocgov.com/gov/pw/cd/planning/generalplan2005.asp</u>. Amended 2012.
 - —. 2019. "Department History" for the Orange County Sheriff's Department. <u>https://cms.ocgov.com/gov/sheriff/about/history/default.asp</u>
- Dames & Moore. 1995 (December). Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment Along Orange County's Transportation Network.
- Department of Oil Gas and Geothermal Resources (DOGGR). 2017. Available at: http://www.consrv.ca.gov/DOG/maps/Pages/d1_index_map1.aspx. Accessed December 28, 2017.
- Eisenstein, Paul A. 2017 (March 16). "Trump Rolls Back Obama-Era Fuel Economy Standards." *NBC News*. Available at: <u>http://www.nbcnews.com/business/autos/trump-rolls-back-obama-era-fuel-economy-standards-n734256.</u>
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1). Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.

Federal Highway Administration (FHWA). 2006 (January). Roadway Construction Noise Model User's Guide. Washington, D.C. Available at: https://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf. Accessed September 2018.

- 2011 (June). U.S. Department of Transportation Policy Statement on Climate Change Adaptation. Available at: <u>https://www.fhwa.dot.gov/environment/sustainability/resilience/policy_and_guidance/us_dot.cfm</u>.
- ———. 2019 (updated February 7). Sustainability. Available at: <u>https://www.fhwa.dot.gov/environment/sustainability/resilience/</u>.
- ———. No date. Sustainable Highways Initiative. Accessed March 27, 2019. Available at: <u>https://www.sustainablehighways.dot.gov/overview.aspx</u>.
- Fehr & Peers. 2017 (January). Final Traffic/Circulation Impact Report, State Route 55 (I-5 to SR-91) Widening Project.
- ———. 2018a (February). Final Traffic Volume Report, State Route 55 (I-5 to SR-91) Widening Project.
- ------.2018b (July). Final Traffic Operations Report, State Route 55 (I-5 to SR-91) Widening Project.
- ——. 2019 (August). *Traffic Analysis Addendum for State Route 55 From Interstate 5 to State Route 91 Improvement Project*. EA 0K720K.
- HDR. 2018a (April 18). Location Hydraulic Study (LHS), State Route 55 Improvement Project from Interstate 5 to State Route 91 and Appendix 1, Location Hydraulic Study and Floodplain Evaluation Report Summary.
- ------. 2018b (October). Preliminary Drainage Report, State Route 55 Widening Project PA/ED.
- ———. 2018c (November 30). Water Quality Technical Memorandum, State Route 55 Improvement Project from Interstate 5 to State Route 91.
- ———. 2019 (March). Long-Form Stormwater Data Report, State Route 55 Improvement Project from Interstate 5 to State Route 91.
- ICF. 2012. Preliminary Jurisdictional Delineation for Project F2 or F North.
 - ———. 2016. Orange County Transportation Authority (OCTA) M2 Natural Community Conservation Plan and Habitat Conservation Plan Final.

Industry Scholars. 2000. Intersection Capacity Utilization Methodology.

- Intergovernmental Panel on Climate Change (IPCC). 2007 (February). Climate Change 2007: The Physical Science Basis: Summary for Policy Makers. Available at: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/spm.html.
- Jacobs Engineering Group (Jacobs). 2018 (May). Bat Habitat Assessment for Proposed State Route 55 Improvement Project between Interstate 5 and State Route 91. Santa Ana, CA: Caltrans District 12.
 - ------. 2018 (June). Rare Plant and Vegetation Assessment for Proposed State Route 55 Improvement Project between Interstate 5 and State Route 91.
- Legal Information Institute. 2019. 33 U.S. Code Section 1251 Congressional Declaration of Goals and Policy. Available at: <u>https://www.law.cornell.edu/uscode/text/33/1251</u>.
- Leighton Consulting, Inc. (Leighton). 2014 (September 30). *Initial Site Assessment for the State Route 55 (SR) 55 Improvement Project from Interstate (I-) 5 to SR 91*. Updated by Jacobs Engineering Group on April 23, 2018.
 - ——.2018a (February 23, revised March 27, 2018). *Structure Preliminary Geotechnical Report, Lincoln Avenue Undercrossing (Southbound Off-Ramp) Bridge No. 55-0328S, Orange County, California.* Irvine, CA. Prepared for Jacobs Engineering.
 - ———. 2018b (March 26, revised May 2, 2018). District Preliminary Geotechnical Report, State Route 55 Improvement Project from Interstate 5 to State Route 91, Orange County, California. Irvine, CA. Prepared for Jacobs Engineering.
- Lichvar, R.W. and S.M. McColley. 2008 (August). A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual. Hanover, NH: USACE, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory.
- LSA Associates, Inc. (LSA). 2018a (September). *Noise Study Report* (NSR) for the SR 55 Improvement Project from I-5 to SR 91. Santa Ana, CA: Caltrans District 12.
 - ——. 2018b (November). *Noise Abatement Decision Report for the SR 55 Improvement Project from I-5 to SR 91*. Santa Ana, CA: Caltrans District 12.
- National Academy of Sciences, Engineering, Medicine. 2012 (June). Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future. Washington, DC: The National Academies Press. Available at: <u>http://www.nap.edu/catalog.php?record_id=13389</u>.
- National Cooperative Highway Research Program. 2008 (April). Comprehensive Modal Emission Model.

- National Highway Traffic Safety Administration (NHTSA). 2010 (April). Corporate Average Fuel Economy (CAFE) standards. Available at: <u>https://one.nhtsa.gov/Laws-&-Regulations/CAFE-%E2%80%93-Fuel-Economy</u>.
 - ———. 2012 (July). Corporate Average Fuel Economy Standards Passenger Cars and Light Trucks Model Years 2017-2025, Final Environmental Impact Statement. Pages 5-12. Available at: <u>http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/FINAL_EIS.pdf</u>.
- Orange County Transportation Authority (OCTA). 2012 (September 10). M2020 Plan. Available at: <u>https://www.octa.net/pdf/M2020_Plan.pdf</u>.
- ———. 2014 (September 12). 2014 Long Range Transportation Plan: Outlook 2035, Because Mobility Matters. Available at: <u>http://www.octa.net/pdf/OCTALRTP_Final.pdf</u>.
- ———. 2015 (November). 2015 Orange County Congestion Management Program. Available at: <u>http://www.octa.net/pdf/Final%202015%20CMP.pdf</u>.

- ———. 2018 (September). Next 10 Delivery Plan. Available at: <u>https://www.octa.net/pdf/Next10DeliveryPlan.pdf?n=20180927</u>.
- ------. Orange County Transportation Analysis Model (OCTAM), Version 4.0.
- Orange County Transportation Authority and Orange County Council of Governments. 2011. Orange County Sustainable Communities Strategy.
- Orange County Water District (OCWD). 2015. Orange County Water District Groundwater Management Plan 2015 Update. Available at: <u>https://www.ocwd.com/media/3622/groundwatermanagementplan2015update_20150624.</u> <u>pdf</u>. Accessed: October 12, 2018.
- 2018 (June 11). Orange County Water District. June 2017 Groundwater Elevation Contours for the Principal Aquifer. Available at: <u>https://www.ocwd.com/media/6748/june_wl_principal_2017.pdf</u>.
- Paleo Solutions. 2018 (October). Paleontological Identification Report and Evaluation Report, State Route 55 (SR 55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR 91). Orange County, California.

 2019 (March). Archaeological Survey Report (ASR), State Route 55 (SR 55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR 91). Orange County, California.

- Pedersen, N.J., and D.R. Samdahl. 1982. *Highway Traffic Data for Urbanized Area Project Planning and Design*. Washington, D.C.: Transportation Research Board. Available at: <u>http://onlinepubs.trb.org/Onlinepubs/nchrp/nchrp_rpt_255.pdf</u>.
- Sacramento Metropolitan Air Quality Management District. 2016 (May). Roadway Construction Emissions Model, Version 8.1.0. Available at: <u>http://www.airquality.org/LandUseTransportation/Documents/RoadConstructionEmissio</u> <u>nsModelVer8_1_0_locked_05262016.xls</u>.
- Santa Ana Regional Water Quality Control Board (RWQCB). 2016 (February). 1995 Water Quality Control Plan for the Santa Ana River Basin (Region 8).
- Sapphos Environmental, Inc. (Sapphos). 2019 (March). Historic Property Survey Report (HPSR), State Route 55 (SR 55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR 91). Orange County, California.
- Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation (Second Edition)*. Sacramento, CA: CNPS.
- South Coast Air Quality Management District (SCAQMD). 2003 (August). Final 2003 Air Quality Management Plan (AQMP) Appendix V, Modeling and Attainment Demonstrations. Pages V-4-25 and V-4-26. Available at: <u>https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-managementplans/2003-air-quality-management-plan/2003-aqmp-appendix-v.pdf?sfvrsn=2</u>.
- 2009 (December). CEQA Guide, Chapter 6: Greenhouse Gas Emissions. Revised April 2011. Available at: http://www.airquality.org/LandUseTransportation/Documents/Ch6GHGFinal5-2018.pdf.
- ------. 2019. Historical Data by Year. Available at: http://www.aqmd.gov/home/air-quality/air-quality-data-studies/historical-data-by-year.

Southern California Association of Governments (SCAG). 2012. Regional Transportation Plan.

- ———. 2012. SCAG 2012 General Plan Land Use and Zoning Data Orange County.
- ———. 2015a (May). Profile of the City of Orange.

- 2015b (December). 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Prepared by Sapphos Environmental, Inc.
 <u>http://scagrtpscs.net/Documents/2016/peir/draft/2016dPEIR_Complete.pdf/</u> Demographics and Growth Forecast, Appendix to RTP.
- ——. 2016a (September). Adopted 2017 Federal Transportation Improvement Program.
- ———. 2016b (April). 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy.

- ------. 2017 (April). 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy, AMENDMENT #1.
- ——. 2017a (May). Profile of the City of Anaheim.
- _____. 2017b (May). Profile of the City of Tustin.
- _____. 2017c (May). Profile of the City of Villa Park.
- _____. 2017d (May). Profile of the City of Santa Ana.
- . 2018 (adopted September 6). 2019 Federal Transportation Improvement Program (FTIP). Available online at: <u>http://ftip.scag.ca.gov/Pages/2019/approved.aspx.</u>
- ------. 2019. Profile of Unincorporated Orange County. May. https://www.scag.ca.gov/Documents/UnIncAreaOrangeCounty.pdf.
- State of California. 2013 (updated 2019). Ocean Protection Council. State of California Sea-Level Rise Guidance Document. Available at: <u>http://www.opc.ca.gov/2013/04/update-to-</u> <u>the-sea-level-rise-guidance-document/</u>.
- Tatsumi & Partners, Inc. (Tatsumi). 2018 (October 24). Visual Impact Assessment, State Route 55 Improvement Project from Interstate 5 to State Route 91, Post Mile 10.4 to R17.9.
 Orange County, California EA#0K7200, EFIS#: 1213000149. Prepared for Caltrans District 12.
- Terry A. Hayes Associates Inc. 2018 (November, updated March 2019). Air Quality Assessment Report, State Route 55 (Interstate 5 to State Route 91) Widening. Prepared for Caltrans District 12.

-.2019 (November). Air Quality Conformity Analysis, State Route 55 (Interstate 5 to State Route 91) Widening. Prepared for Caltrans District 12.

- Transportation Research Board (TRB). 2016. *Highway Capacity Manual, Sixth Edition: A Guide for Multimodal Mobility Analysis*. Published by the National Academy of Sciences, Engineering, and Medicine. Washington, D.C.: TRB.
- U.S. Army Corps of Engineers (USACE). 1988 (June). *Design Memorandum No. 1, Vol. 6: Santa Ana River Mainstem, including Santiago Creek, California.* Phase II General Design Memorandum.
 - —. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). (J.S. Wakeley, R.W. Lichvar, and C.V. Noble, Eds.). Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- ———. 2015 (June 29). Clean Water Rule: Definition of "Waters of the United States". Federal Register 80(124): 37054–37127. Washington, D.C.: USACE.
- U.S. Army Corps of Engineers and Environmental Protection Agency (USACE and U.S. EPA). 2011. *Guidance to Identify Waters Protected by the Clean Water Act.*
- ———. 2015 (June 29). Clean Water Rule: Definition of "Waters of the United States". Federal Register 80(124): 37054–37127. Washington, D.C.: USACE and U.S. EPA.
- U.S. Census Bureau. 2010 (April). 2010 Census.
- U.S. Census Bureau. 2018 (December). 2013-2017 American Community Survey (5-year estimates).
 U.S. Department of Health and Human Services (DHHS). 2019. Poverty Guidelines Updated Periodically in the Federal Register under the authority of 42 U.S.C. 9902(2).
- U.S. Department of Homeland Security Federal Emergency Management Agency (FEMA). 2009 (December 3). Flood Insurance Rate Maps (FIRM). Orange County, California.
- U.S. Energy Information Administration (EIA). 2013 (April). Annual Energy Outlook 2013 with Projections to 2040. Available at: <u>https://www.eia.gov/outlooks/aeo/pdf/0383(2013).pdf</u>.
- U.S. Environmental Protection Agency (U.S. EPA). 2010 (February 9). Primary National Ambient Air Quality Standards for Nitrogen Dioxide; Final Rule. Available at: <u>https://www.govinfo.gov/content/pkg/FR-2010-02-09/pdf/2010-1990.pdf</u>.
 - —. 2015 (November). Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas. Available at: <u>https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100NMXM.pdf</u>.
 - -----. 2016a (April). U.S. Greenhouse Gas Inventory Report: 1990-2014. Available at: <u>https://www.epa.gov/ghgemissions/us-greenhouse-gas-inventory-report-1990-2014</u>.

- 2016b (November). Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 through 2016 Report. Available at: <u>https://www.fueleconomy.gov/feg/pdfs/420r16010.pdf</u>.
- 2017. Outdoor Air Quality Data Monitor Values Reports. Available at: <u>https://www.epa.gov/outdoor-air-quality-data/monitor-values-report</u>. Accessed March 29, 2019.
- ———. 2019. Status of California Designated Areas. Available at: <u>https://www3.epa.gov/airquality/urbanair/sipstatus/reports/ca_areabypoll.html</u>. Accessed March 29, 2019.
- U.S. Environmental Protection Agency and Department of Transportation's (DOT) National Highway Traffic Safety Administration (U.S. EPA and NHTSA). 2010 (May). Final Rule for Model Year 2012 - 2016 Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards. Regulations for Greenhouse Gas Emissions from Passenger Cars and Trucks. <u>https://www.epa.gov/regulations-emissionsvehicles-and-engines/regulations-greenhouse-gas-emissions-passenger-cars-and</u>.
 - —. 2012 (October). Final Rule for Model Year 2017 and Later Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards. Regulations for Greenhouse Gas Emissions from Passenger Cars and Trucks. <u>https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulationsgreenhouse-gas-emissions-passenger-cars-and</u>.
- U.S. Fish and Wildlife Service (USFWS). 2018. Official Species List for the Proposed Project. Accessed June 15, 2018.
- U.S. Forest Service (USFS). 2009 (July 13). Climate Change Considerations in Project Level NEPA Analysis. Available at: <u>https://www.fs.fed.us/climatechange/documents/nepa-guidance.pdf</u>.

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Appendix E: List of Technical Studies

The technical studies listed below were used in the preparation of this Initial Study/Environmental Assessment.

Air Quality Assessment Report, State Route 55 (Interstate 5 to State Route 91) Widening (November 2018, updated March 2019) prepared by Terry A. Hayes and Associates

Air Quality Conformity Analysis, State Route 55 (Interstate 5 to State Route 91) Widening (November 2019) prepared by Terry A. Hayes and Associates

Archaeological Survey Report, State Route 55 (SR 55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR 91) (March 2019) prepared by Paleo Solutions

Bat Habitat Assessment for Proposed State Route 55 Improvement Project between Interstate 5 and State Route 91. (May 2018) prepared by Jacobs Engineering Group

Final Project Report (March 2020) prepared by Jacobs Engineering

Final Traffic/Circulation Impact Report, State Route 55 (I-5 to SR-91) Widening Project (January 2017) prepared by Fehr & Peers

Final Traffic Operations Report, State Route 55 (I-5 to SR-91) Widening Project (July 2018) prepared by Fehr & Peers

Final Traffic Volume Report, State Route 55 (I-5 to SR-91) Widening Project (February 2018) prepared by Fehr & Peers

Historic Property Survey Report (HPSR), State Route 55 (SR 55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR 91) (March 2019) prepared by Sapphos Environmental, Inc.

Historical Resources Evaluation Report (HRER), State Route 55 (SR 55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR 91) (March 2019) prepared by Sapphos Environmental, Inc.

Location Hydraulic Study, State Route 55 Improvement Project from Interstate 5 to State Route 91 and Appendix 1 (April 2018) prepared by HDR

Long-Form Stormwater Data Report, State Route 55 Improvement Project from Interstate 5 to State Route 91 (March 2019) prepared by HDR

Natural Environment Study (Minimal Impacts) Report (NES [mi]) for State Route 55 Improvement Project Between Interstate 5 and State Route 91 (January 2019) prepared by Jacobs Engineering

Noise Abatement Decision Report for the SR 55 Improvement Project from I-5 to SR 91 (November 2018) prepared by LSA Associates, Inc.

Noise Study Report (NSR) *for the SR 55 Improvement Project from I-5 to SR 91* (September 2018) prepared by LSA Associates, Inc.

Paleontological Identification Report and Evaluation Report (PIR/PER) State Route 55 (SR 55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR 91) (October 2018) prepared by Paleo Solutions

Phase I Initial Site Assessment for the State Route 55 (SR) 55 Improvement Project from Interstate (I-) 5 to SR 91 (April 2018) prepared by Leighton Consulting, Inc., updated by Jacobs Engineering Group

Preliminary Drainage Report, State Route 55 Widening Project (October 2018) prepared by HDR

Revised District Preliminary Geotechnical Report, State Route 55 Improvement Project from Interstate 5 to State Route 91, Orange County, California (May 2018) prepared by Leighton Consulting, Inc.

SR 55 Improvement Project Energy Consumption Data Sheets, *State Route 55 Improvement Project from Interstate 5 to State Route 91, Orange County, California* (March 2019) prepared by Terry A. Hayes and Associates.

SR 55 (I-5 to SR 91) Improvement Project Public Information Meeting Summary Report, *State Route 55 Improvement Project from Interstate 5 to State Route 91, Orange County, California* (March 2019) prepared by Terry A. Hayes and Associates.

Structure Preliminary Geotechnical Report, Lincoln Avenue Undercrossing (Southbound Off-Ramp) Bridge No. 55-0328S, Orange County, California (March 2018) prepared by Leighton Consulting, Inc.

Traffic Analysis Addendum for State Route 55 From Interstate 5 to State Route 91 Improvement Project (EA 0K720K) (August 2019) prepared by Fehr & Peers

Visual Impact Assessment, State Route 55 Improvement Project from Interstate 5 to State Route 91, Post Mile 10.4 to R17.9 (October 2018) prepared by Tatsumi & Partners, Inc.

Water Quality Technical Memorandum State Route 55 Improvement Project from Interstate 5 to State Route 91 (November 2018) prepared by HDR

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Appendix F: Response to Comments

F.1 Introduction

All the responses to the comments received on the State Route 55 (SR 55) (Interstate 5 [I-5] to SR 91) Improvement Project Draft Initial Study/Environmental Assessment (IS/EA) are provided in this appendix. Chapter 4 of the IS/EA summarizes the results from the public review period. The comments and responses are grouped by the type or how the comment was received, as follows:

- Federal Government Agencies
- State Governments Agencies
- Regional Government Agencies and Organizations
- Local Government Agencies and Organizations
- Comments Received by Comment Card at Public Open House
- Comments Received by Court Reporter at Public Open House
- Comments Received by Email
- Comments Received by Email with Common Responses

F.2 Common Responses

The following common responses were assigned to comments that were based on singular topic and were frequently noted during the public comment period.

F.2.1 Common Response 1 (CR-1): Noise Impacts/Sound Walls along SR 55 between La Veta and Chapman Avenue

The proposed project would add one northbound general-purpose lane between I-5 and SR 22 and one southbound general-purpose lane between I-5 and SR 22, provide additional capacity on the southbound SR 55 Katella Avenue off- and on-ramps, and relocate the southbound SR 55 Lincoln Avenue off-ramp approximately 1,300 feet to the south. However, no physical improvements are proposed for the ramps at Chapman Avenue and along SR 55 between La Veta and Chapman Avenue (Figure 1.3-1), and this area is beyond the limits of the noise study area. Because the area is beyond the limits of the noise study area, no noise barriers would be identified. The Noise Study Report (NSR) was prepared based on current Caltrans guidelines and procedures from the May 2011 *Caltrans Traffic Noise Analysis Protocol* and the September 2013 *Technical Noise Supplement*.

F.2.2 Common Response 2 (CR-2): Air Quality/Pollution

Caltrans has adopted Federal Highway Administration (FHWA) guidance for evaluating Mobile Source Air Toxics (MSAT) emissions. As disclosed in the IS/EA and the Air Quality Report, implementation of the Proposed Project would result in daily MSAT emissions of lesser magnitude than the Baseline (2017) emissions and the No-Build Alternative emissions in both the opening year (2035) and the design year (2055). Thus, implementation of the Proposed Project would reduce MSAT emissions, resulting in lower concentrations at receptor locations. The analysis also did not identify a significant regional or localized air quality impact associated with construction of the Proposed Project.

F.2.3 Common Response 3 (CR-3): Ramps at Chapman Avenue

At the early stage of the project, the project development team (PDT) evaluated potential improvements at the southbound SR 55 on-ramp from eastbound Chapman Avenue. To prevent the weaving from eastbound Chapman Avenue on-ramp to southbound SR 55, the PDT looked into potential access restriction at this on-ramp to only allow the on-ramp traffic to access westbound SR 22. However, the access restriction would redirect a large amount of traffic from eastbound Chapman Avenue to use the loop on-ramp in order to access southbound SR 55 and would degrade traffic operations at the southbound SR 55/Chapman intersection and result in significant vehicle queue and additional safety concerns along eastbound Chapman Avenue. Because of the adverse impact to traffic operations and safety, this access restriction option was dropped from further consideration Please see additional discussion in Section 1.3.4, Alternatives Considered But Eliminated from Further Study.

F.2.4 Common Response 4 (CR-4): Request for Draft IS/EA

The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.

F.3 Index of Comments Received

The responses to comments are organized to correspond specifically to the comment, starting with the base comment index letter/number designation. All of the comments received are included in Table F-1 along with the responses to comments. The copies of the comments also show the complete index letter/number, for cross-reference purposes.

Comment Code	Name	Agency or Organization Name	Date Received	Appendix F Page No.					
Governme	Government Agencies & Organizations								
F-1	Gregor Blackburn, FRM	U.S. Department of Homeland Security, FEMA Region IX	10/15/2019	F-5					
S-1	Gail K. Sevrens & Simona Altman	California Department of Fish and Wildlife	10/29/2019	F-8					
R-1	Fiona Sanchez	Irvine Ranch Water District	10/8/2019	F-10					
R-2	Lijin Sun, J.D.	South Coast Air Quality Management District	10/22/2019	F-11					

Table F-1: Index o	f Comments	Received
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Comment Code	Name	Agency or Organization Name	Date Received	Appendix F Page No.
R-3	Michael R. Markus	Orange County Water District	10/22/2019	F-17
R-4	Cindy Salazar & Richard Vuong	County of Orange	10/30/2019	F-21
L-1	Ruben Castaneda	City of Santa Ana	10/17/2019	F-23
L-2	Rafael Cobian	City of Anaheim	10/28/2019	F-24
L-3	Doug Keys	City of Orange	10/30/2019	F-25
	Com	nment Cards		
CC-1	Michael Austin		10/16/2019	F-27
CC-2	Don N. Holthe		10/16/2019	F-28
CC-3	Dean Thomas		10/16/2019	F-29
CC-4	Francine Scinto		10/16/2019	F-30
CC-5	George Dore		10/16/2019	F-31
CC-6	Tyler Castro		10/16/2019	F-32
CC-7	Roberto Nieto		10/16/2019	F-33
CC-8	Anonymous		10/16/2019	F-34
CC-9	Melinda Hasenohrl		10/16/2019	F-35
CC-10	John Reynolds		10/16/2019	F-36
	Court Rep	oorter Transcripts		
TR-1	Steven Lichten		10/16/2019	F-37
TR-2	Mr. Santucci		10/16/2019	F-38
TR-3	David Montoya		10/16/2019	F-40
TR-4	Mark Michalak		10/16/2019	F-41
	Public Co	mments by Email		
PC-1	Gary Gettman		09/30/2019	F-76
PC-2	Karen Chapman, PE		10/01/2019	F-77
PC-3	ES		10/03/2019	F-78
PC-4	Karen DiCarlo		10/05/2019	F-79
PC-5	Cheryl Hyon		10/5/2019	F-80
PC-6	Francis Hunter		10/11/2019	F-81
PC-7	Mike Hampson		10/11/2019	F-43
PC-8	Jeff Gomes		10/11/2019	F-82
PC-9	David Schilpp		10/11/2019	F-83
PC-10	Lauren Murphy		10/14/2019	F-84
PC-11	Sean Noonan		10/14/2019	F-85

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Comment Code	Name	Agency or Organization Name	Date Received	Appendix F Page No.
PC-12	Sean Noonan		10/14/2019	F-86
PC-13	Diane Thomas		10/15/2019	F-44
PC-14	Herb Cooley		10/15/2019	F-45
PC-15	Mike Lebeau		10/15/2019	F-87
PC-16	Sean Noonan		10/15/2019	F-88
PC-17	John Reynolds		10/15/2019	F-46
PC-18	Francine Scinto		10/16/2019	F-89
PC-19	Roxane Irene Kobalka		10/16/2019	F-47
PC-20	Theresa Laughlin		10/16/2019	F-49
PC-21	Mary Flores		10/17/2019	F-90
PC-22	Jackson Hurst		10/17/2019	F-50
PC-23	Alma Karic		10/17/2019	F-91
PC-24	John Farrell		10/20/2019	F-51
PC-25	Joanne Ady		10/20/2019	F-92
PC-26	Linda Cota-Robles		10/20/2019	F-52
PC-27	Edward and Jennifer Farrell		10/21/2019	F-53
PC-28	Jessica Prechtl		10/21/2019	F-54
PC-29	Sharon Galasso		10/22/2019	F-55
PC-30	Alan Kinkaid		10/22/2019	F-56
PC-31	Sparrow LaPoint		10/22/2019	F-57
PC-32	Lawrence A. Klein		10/25/2019	F-93
PC-33	Martha Michalak		10/29/2019	F-58
PC-34	Mike Campisi, SoCal Gas		10/30/2019	F-59
PC-35	Matthew Barrass	Vista Royale Homeowners Association	10/30/2019	F-61
PC-36	Denis Bilodeau		10/30/2019	F-62
PC-37	Lawrence A. Klein		10/31/2019	F-68
PC-38	Lawrence A. Klein		11/1/2019	F-70
PC-39	Dan Slater		12/5/2019	F-73

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Comment Letter F-1	Response to Comment Letter F-1
<text><text><text><text><text><text><text><text><text><text><text></text></text></text></text></text></text></text></text></text></text></text>	Comments from Federal Emergency Management Agency (FEMA) Region IX have been documented for the public record. The FEMA FIRM panels for the project area were reviewed and are included in Figure 2.8-2 through Figure 2.8-6 and the base Flood Hazard Zone of the proposed reach of the Santiago Creek adjacent to the SR 55 is designated as Zone AE. The FEMA FIRM confirms that the 1-percent annual chance (also known as the 100-year event) floodplain is contained within the creek channel at the project area. No encroachments of the Santiago Creek floodplain are expected within the limits of the proposed project. The proposed project is a freeway improvement project to an existing freeway within the Caltrans ROW. The proposed project would not include the construction of new buildings or modifications of existing buildings. During construction, activities would occur primarily within the right-of-way. The project construction activities would not reduce or otherwise affect the flood storage capacity and would not modify flood flows. Furthermore, construction activities would not result in direct or indirect temporary adverse impacts related to hydrology and floodplains. The 100-year floodplain associated with Santiago Creek within the project area is contained within the creek channel. The project is not anticipated to encroach upon any 100-year floodplains, including the Santiago Creek floodplain. No natural and beneficial floodplain values are present. No restoration or preservation measures are required. No increases in base flood elevations in reserved areas of the floodplain (floodway) would occur. The project does not support incompatible floodplain development. No horizontal or longitudinal encroachments are within the Santiago Creek floodplain as a result of the project.

F.4 Federal Government Comments & Responses

<text><text><text><text><text><text></text></text></text></text></text></text>	Comment Letter F-1	Response to Comment Letter F-1
<text><text><text><text><text></text></text></text></text></text>		Refer to page F-5 for the response to Comment F-1.
<text><text><text><text><text></text></text></text></text></text>	Charles Baker, Coltrans District 12 Page 2 October 15, 2019	
 here completions of any development that hanges existing Special Filos of Lizza's development to approximate to solution approximation approximatio	 All buildings constructed within a coastal high hazard area, (any of the "V" Flood Zones as delineated on the FIRM), must be clevated on pilings and columns, so that the lowest horizontal structural member, (excluding the pilings and columns), is elevated to or above the base flood elevation level. In addition, the posts and pilings foundation and the structure attached thereto, is anchored to resist floation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. 	
Pices Prior Prior Stripping communities in support and pathod plan manageres to thick graniton on took plan manageres to thick graniton manageres to make information on took plan manageres to thick graniton manageres to thick graniton manageres to thick graniton manageres to the advector particles in the advector pa	 Upon completion of any development that changes existing Special Flood Hazard Areas, the NFIP directs all participating communities to submit the appropriate hydrologic and hydraulic data to EMAA for a FIRM revision. In accordance with 44 CFR, Section 65.3, as soon as practicable, but not later than six months after such data becomes available, a community shall notify FIDMA of the changes by submitting technical data for a flood map revision. In coloring copies of FEMA's Flood May Revision Application Packages, please refer to the TEMA website at http://www.fema.gov/business/nfip/forms.shun. 	
Mary NTP participating communities have adopted floodplata management building requirements which are more restrictive time the minimum faderal standards described in a for the constant the local numeron memory on the probability management are breached by calling Party Lew, Eloodplata Manager, at (214) 647-3980. The Analysian Bookychian manager can be reached by calling Party Lew, Eloodplata manager can be reached by calling Party I and Bookychian manager can be reached by calling Party Har. Tushing Har.	Please Note:	
If you have any questions or concerns, please do not hesitate to call Brian Trushinski of the Mitigation staff at (510) 627-7183. Sincerely. Gregor Ulackburn, CFM, Branch Chief* Ploodplain Management and Insurance Brunch	Many NFIP participating communities have adopted floodplatn management building requirements which are more restrictive than the minimum federal standards described in 44 CFR. Please contact the local community's floodplain manager for more information on local floodplain management building requirements. The Orange County floodplain manager can be reached by calling Penny Lew, Floodplain Manager, at (714) 647-3990. The Anahoim floodplain manager can be reached by calling Jonnthan Borrego, Planning Director, at (714) 765- 5016. The Orange floodplain manager can be reached by calling Jim Devore, Associate Engineer, at (714) 744-5545. The Tustin floodplain manager can be reached by calling Henry Huang, Building Official, at (714) 573-5140. The Santa Ana floodplain manager can be reached by calling Nabil Chehade. Senior Plan Check Engineer, at (714) 647-5848.	
Sincerely. Gregor Blackburn, CFM, Branch Chiel [*] Floodplain Management and Insurance Branch www.finage*	If you have any questions or concerns, please do not hesitate to call Brian Trushinski of the Mitigation staff at (510) 627-7183.	
west gauges	Sincerely. Gregor Blackburn, CFM, Branch Chief Floodplain Mauagement and Insurance Branch	
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Comment Letter F-1	Response to Comment Letter F-1
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F.5 State Agency Comments & Responses

State Agency Comment S-1	Response to S-1
	California Department of Fish and Wildlife's (CDFW) concurrence of the IS/EA has been documented for the public record. Measure BIO-1 BATS, as described in Chapter 2.18.4 of the Final IS/EA, has been revised to include CDFW's comment regarding bats. The revision to BIO-1 BATS included the addition of the following text in italics: <i>Coordinate with CDFW on the pre-construction habitat</i> <i>assessment and surveys to check with the species occupancy</i> <i>and conservation status at the time of project construction.</i> <i>Coordination should include, but not be limited to, (a) the</i> <i>timing of the surveys, (b) reporting of the assessment and</i> <i>survey results, and (c) development of appropriate avoidance</i> <i>and minimization measures.</i> Further coordination efforts with CDFW will occur as the project progresses, including a pre-permit discussion.

State Agency Comment S-1 (Continued)	Response to S-1
Charles Baker, Senior Environmental Planner California Department of Transportation District 12 October 29, 2019 Page 2 of 2	Refer to page F-8 for the response to comment S-1.
However, the NES indicates six concrete drainage features that may be subject to Fish and Game Code section 1600 <i>et seq.</i> Additionally, surveys indicate evidence of bat occupancy at two structures, Santiago Creek Bridge over SR-55, and the Abandoned Railroad Overhead. The Project is not anticipated to start until June 2032, and Caltrans indicates updated biological surveys will be conducted during the next phases of the Project.	
The Department evaluated the biological assessment and proposed protection measures in the IS/MND and found them to be consistent with those established in the NCCP/HCP. The Department provides the following specific comments and recommendations to assist Caltrans in avoiding or minimizing potential impacts to sensitive species and habitats.	
 Measure BIO-1 BATS indicates bat habitat assessment surveys will be conducted prior to Project construction. Since the Project is not anticipated to start until June 2032 and species occupancy and conservation status may change between now and 2032, the Department recommends that Calitrans coordinate the pre-construction habitat assessment and surveys with the Department. Coordination should include but not be limited to a) the timing of the surveys, b) reporting the assessment and survey results, and c) development of appropriate avoidance and minimization measures. 	
The Department appreciates the cooperation of Caltrans in protecting sensitive biological resources. Thank you for the opportunity to comment on the IS/MND. If you have any questions regarding this letter, please contact Simona Altman at (858) 467-4283 or email simona altman@widlife.ca.ov.	
Sincerely,	
Gail K. Sevrens Environmental Program Manager South Coast Region	
ec: State Clearinghouse, Sacramento	
<u>California Department of Fish and Wildlife</u> Simona Altman Kyte Rice David Mayer	
Jonathan Snyder, Division Chief, US Fish and Wildlife Service Jonathan_d_snyder@fws.gov	
Lesley Hill, Environmental Mitigation Program, Orange County Transportation Authority Ihill@octa.net	

F.6 Regional Agency Comments & Responses

Regional Agency Comment R-1	Response to R-1
	The comment from Irvine Ranch Water District (IRWD) has been documented as part of the public record. Caltrans will coordinate with IRWD with any changes or revisions to the proposed project.
Irvine Ranch	
October 8, 2019	
Charles Baker Caltrans District 12 Division of Environmental Analysis 1750 E. 4 th Street, Suite 100 Santa Ana, CA 92705	
Re: NOI/Draft ND for State Route 55 Improvement Project	
Dear Mr. Baker:	
Irvine Ranch Water District (IRWD) has received the Caltrans' Notice of Intent (NOI) for the State Route (SR) 55 Improvement Project Negative Declaration (ND). IRWD understands that the proposed project involves improvements to SR-55 between Interstate 5 and SR-91.	
IRWD has reviewed the NOI/Draft ND and has no comments. If there are any changes or revisions to the proposed project, Caltrans should notify IRWD so that IRWD can determine if the changes would impact any IRWD facilities.	
Thank you for the opportunity to review the NOI/ND. If you have any questions or require additional information, please contact the undersigned at (949) 453-5325 or Jo Ann Corey, Environmental Compliance Specialist at (949) 453-5326.	
Sincerely,	
fm Jan chag	
Fiona M. Sanchez Director of Water Resources	
ec: Jo Ann Corey, IRWD	
Indine Ranch Water District + 15820 Sand Cargon Ava. Indine, CA 102616 + Hilling Address R2, Bio 57000, Johne, CA 102616-7000 + 949-453-5300 + www.indic.com	

Regional Agency Comment R-2	Response to R-2
	Refer to page F-12 for the letter from South Coast Air Quality Management District and the response to comment R-2.
From: Lijin Sun <lsun@aqmd.gov> Sent: Tuesday, October 22, 2019 4:14 PM To: D12SR55NorthProject@DOT Subject: South Coast AQMD Staff Comments on the Negative Declaration for the State 55 Improvement Project Attachments: ORC191001-10 ND State Route 55 Improvement Project_20191022.pdf</lsun@aqmd.gov>	Route
Follow Up Flag: Follow up Flag Status: Flagged	
Dear Mr. Baker,	
Attached are South Coast AQMD staff comments on the Negative Declaration for the State Route 55 Improvement Project (<u>South Coast AQMD Control Number: ORC191001-10</u>). The original, electronically signed letter will be for to your attention by regular USPS mail. South Coast AQMD staff comments are meant as guidance for the Lead A and should be reviewed for incorporation into the Final ND. Please contact me if you have any questions regardin comments. Thank you, Lijin Sun, J.D. Program Supervisor, CEQA IGR South Coast Air Quality Management District 21865 Copley Drive, Diamond Bar, CA 91765 Direct: (900) 396-3308 Fax: (900) 396-3324 Please note South Coast AQMD is closed on Mondays.	nt warded gency ng these
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Regional Agency Comment R-2 (Continued)	Response to R-2
<image/> <image/> <image/> <text><text><text><text><text><text><text><text><text><text><text><text><text></text></text></text></text></text></text></text></text></text></text></text></text></text>	Comment Response R-2-1: Comments from the Southern California Air Quality Management District have been documented as part of the public record. Caltrans is the Lead Agency for the Proposed Project, and the environmental analyses presented in the IS/EA follow the Caltrans Standard Environmental Reference. Caltrans is committed to consistency assessing the potential for air quality impacts throughout the state and does not invoke local air district thresholds on case-by-case basis. Caltrans does not require the invocation of local or regional air district thresholds in determining the significance of air quality significance thresholds for the local district is not warranted during construction or operation. The air quality analysis is consistent with the Caltrans Standard Environmental Reference and discloses pollutant emissions, discusses air quality, standards, and discusses the health effects of air pollution.

Regional Agency	Comment R-2 (Continued)	Response to R-2
		Comment Response R-2-2:
Charles Baker Closing Pursuant to CEQA Guidelines Section I shall consider the ND for adoption to process. Please provide the South Coast prior to the adoption of the Final ND. Wi provide sufficient details giving reasons should be good faith, reasoned analys information do not facilitate the purpose or useful to decision makers and to the p Lead Agency should describe the specifi in the Final ND (CEQA Guidelines Section South Coast AQMD staff is available to that may arise from this comment letter. Attachment Is <u>ORC19101-01</u> Control Number	<text><text><text><text><text></text></text></text></text></text>	Comment Response R-2-2: The air quality analysis is consistent with the Caltrans Standard Environmental Reference and discloses pollutant emissions, discusses air quality, standards, and discusses the health effects of air pollution.
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Regional Agency Comment R-2 (Continued)		Response to R-2
Regional Agency Comment R-2 (Continued) Charles Baker October 22, 2019 ATTACHMENT South Coast AQMD's Air Quality CEQA Thresholds of Significance		Response to R-2 Comment Response R-2-3: Caltrans is the Lead Agency for the Proposed Project, and the environmental analyses presented in the IS/EA follow the Caltrans Standard Environmental Reference. Caltrans is committed to consistency assessing the potential for air quality impacts throughout the state and decement in the lead and decement in the lead and decement.
 While CEQA permits a Lead Agency to apply appropriate thresholds to determine the level of significance, the Lead Agency may not apply thresholds in a manner that precludes consideration of substantial evidence demonstrating that there may be a significant effect on the environment. Evaluation of air quality impacts, unlike some other impact areas, easily lends itself to quantification. Not only does quantification make it easier for the public and decision-makers to understand the breadth and depth of the potential air quality impacts, but it also facilitates the identification of mitigation measures required to reduce any significant adverse air quality impacts. South Coast AQMD's CEQA thresholds of significance for air quality provide a clear quantitative benchmark to determine the significance of a project's air quality impacts. Therefore, for most projects within the South Coast AQMD. South Coast AQMD's air quality CEQA thresholds of significance for construction and operation' are used to determine the level of significance of a project's air quality impacts. The Lead Agency quantified the maximum construction and operational emissions for the Proposed Project's build alternative in proude per due' build in our compare those amicine to South Coast 	R-2-3	the state and does not invoke local air district thresholds on case-by- case basis. Caltrans does not require the invocation of local or regional air district thresholds in determining the significance of air quality impacts. Therefore, a comparison to the regional air quality significance thresholds for the local district is not warranted during construction or operation. The air quality analysis is consistent with the Caltrans Standard Environmental Reference and discloses pollutant emissions, discusses air quality, standards, and discusses the health effects of air pollution. Comment Response R-2-4: Caltrans is the Lead Agency for the Proposed Project, and the environmental analyses presented in the IS/EA follow the Caltrans Standard Environmental Reference. Caltrans is committed to consistency assessing the potential for air quality impacts throughout the state and does not invoke local air district thresholds on case-by- case basis. Caltrans does not require the invocation of local or regional air district thresholds in determining the significance of air quality impacts. Therefore, a comparison to the regional air quality significance thresholds for the local district is not warranted during construction or operation. The air quality analysis is consistent with the
 AQMD's air quality CEQA regional spiritisance thresholds to determine the level of significance for the Proposed Project's construction and operational air quality impacts. Using South Coast AQMD's CEQA significance thresholds would clearly identify whether the build alternative would result in significant air quality impacts under CEQA, disclose the magnitude of the impacts, facilitate the identification of feasible mitigation measures, and evaluate the level of impacts before and after mitigation measures. Therefore, South Coast AQMD staff recommends that the Lead Agency compare the build alternative's construction emissions to South Coast AQMD's regional air quality impacts from both construction (including demolition, if any) and operation activities a should be calculated. For operational air quality impacts, please see Comment No. 3 below. Construction-Air Quality Impacts typically include, but are not limited to, emissions from the use of heavy-duty construction (anglunding unloading, paoving, architectural coating, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Based a review of Figure 2.13 in the ND⁷ and aerial photographs, South Coast AQMD staff found that sensitive receptors are located in close proximity to the Proposed Project. Sensitive receptors are people that have an increased sensitivity to air pollution or environmental contaminats. They include schools, parks and playgrounds, daycare centers, nursing homes, elderly care facilities, hospitals, and residential dwelling units. However, the Lead Agency did not quantify the Proposed Project Sensitive receptors are people that have an increased sensitivity to air pollution or environmental contaminats. They include schools, parks and playgrounds, daycare centers, nursing homes, elderly care facilities, hospitals, and residential dwelling units. However, the Lead Agency did not quantify the Proposed Project.	- R-2-4	
 localized construction emissions in the ND. Therefore, South Coast AQMD staff recommends that the Lead Agency quantify the Proposed Project's localized construction emissions and disclose the localized air quality impacts in the Final ND to ensure that any nearby sensitive receptors are not adversely affected by the construction activities that are occurring in close proximity over a 24-month adversely affected by the construction activities that are occurring in close proximity over a 24-month ⁴ South Coast Air Quality Management District. March 2015. <i>South Coast AQMD Air Quality Significance Thresholds</i>. Accessed at <u>http://www.aumd.gov/docs/default-source/ceagMandhook/scagnod-air-quality-significance-thresholds.pdf</u>. ⁴ ND. Table 2.13-6; Page 2.13-19. Table 2.13-7; Page 2.13-22. ⁸ <i>Ibid.</i> ⁴ ND. Pages 2.13-9 through 12. 		Caltrans Standard Environmental Reference and discloses pollutant emissions, discusses air quality, standards, and discusses the health effects of air pollution.
Regional Agency Comment R-2 (Continued)	Response to R-2	
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	Comment Response R-2-4:	
Regional Agency Comment (F22 (Commuted)) Chries Bar Octor 23, 2019 Priod, South Coast AQMD guidance for performing a localized air quality analysis is available on south Coast AQMD website*. South Coast AQMD website*. Mobile Source Health Risk Assessment Analysis A stated above, sensitive receptors are located in close proximity to the Proposed Project. In general, a transportation project that adds freeway capacity generates or attracts new or additional vehicular to a iso lead to more disperse land use development, which in turn leads to additional vehicular is and our coxics emissions. In the event that the build alternative is approved, its inference and the California Air Resources Board (CARP). Therefore, South Coast AQMD staff recommends that the Lead Agency conduct a mobile source health risk assessment (IRA) ¹⁰ in the fail ND to disclose the potential health risks to residents from vehicles including DPM-emitting at the California Air Resources Board (CARP). Therefore, South Coast AQMD staff recommends that the Lead Agency conduct a mobile source health risk assessment (IRA) ¹⁰ in the fail ND to disclose the potential health risks to residents from vehicles including DPM-emitting at ND to disclose the potential health risks to residents from vehicles including DPM-emitting to momination or eliminata and significant adverse innerset. Nota AQMD staff recommends incorporating the following mitigation measures in the Final ND to further reduce construction emissions and health impacts to ersistive receptors. 0. Require the use of zero emission (ZE) or near-zero emission (NZ) heavy-dity trucks during (CARB) adopted optional NOx emission standard of 0.02 grams per brak horspower-borg (CARB) adopted optional NOx emission standare of 0.02 grams per brak horspower horge (CARB) adopted optional N	 Comment Response R-2-4: Caltrans is the Lead Agency for the Proposed Project, and the environmental analyses presented in the IS/EA follow the Caltrans Standard Environmental Reference. Caltrans has adopted FHWA guidance for evaluating Mobile Source Air Toxics (MSAT) emissions FHWA concluded that the available technical tools do not facilitate reliable estimation of pollutant exposure concentrations or prediction project-specific health impacts related to changes in daily MSAT emissions associated with transportation project alternatives. FHWA does not support currently air dispersion modeling of such marginal changes in daily MSAT emissions. Furthermore, the IS/EA quantified and disclosed MSAT emissions associated with implementation of the Proposed Project. As discloss in the IS/EA and the Air Quality Report, implementation of the Proposed Project would result in daily MSAT emissions and the No-Build Alternative emissions in both the opening year (2035) and the design year (2055). Thus, implementation of the Proposed Project would reduce MSAT emissions and resulting concentrations at receptor locations. Additionally, Caltrans does not require the preparation of mobile source HRA for Proposed Project operations is not warranted. Comment Response R-2-5: 	
⁵ Sonth Coast Air Quality Management District. Localized Significance Thresholds. Accessed at http://www.amid.gov/homerequilations/cequir/ar-anality-analysis-hamdbook/localized-significance-thresholds. ⁷ In April 2017, CARB published a technical advisory, Strategies to Reduce Air Pollution Exposure Near High-Folume Roadways: Technical Advisory, to supplement CARB's Air Quality and Land Use Handbook: A Community Health Perspective. This technical advisory is intended to provide information on strategies to reduce exposures to traffic emissions near high-volume roadways: Technical Advisory, Te technical advisory, CaRB's Air Quality and Land Use Health and Promote equily and environmental justice. In the technical advisory, CARB stated that "strete, highway, and freeway ramp intersections have been found to be pollution tot sports' (Page 20). The technical advisory is available at: <u>http://www.amid.gov/home:requalations-tecquality</u> . "Source Dised Hing Emissions for CRQA if <i>ruguity</i> Analysis." Accessed at <u>impl/Aww aging dov/home:requalations-cequiries</u> mathysis. <u>http://www.amid.gov/home.requalations-cequiries</u> mathysis. <u>http://www.amid.gov/home.requalations-cequiries-mathysis.</u> <u>http://www.amid.gov/home.requalations-cequiries-mathysis.</u> <u>http://www.amid.gov/home.requalations-cequiries-mathysis.</u> <u>http://www.amid.gov/home.requalations-cequiries-mathysis.</u> <u>http://www.amid.gov/home.requalations-cequiries-mathysis.</u> <u>http://www.amid.gov/home.requalations-cequiries-mathysis.</u> <u>htt</u>	Comment Response R-2-5: A significant regional air quality impact during operation of the Proposed Project was not identified, therefore, this recommended mitigation measure is not required. Additionally, enforcement of the recommended requirement by the Lead Agency during future operations is not feasible. Regulation of lawful vehicle operation is	
4. 2027, nearly an users and once will need to nave 2010 model year engines or equivalent, softe information on the CARB's Truck and Bus Regulations is available here: <u>https://www.arb.ca.gov/msprog/ondicsel/ondicsel/htm</u> .	codified within the CA Vehicle Code and enforcement is within the purview of the California Highway Patrol and Local Law Enforcement not the lead agency.	

Regional Agency Comment R-2 (Continued)	Response to R-2
<text><text><text><text><text><text><footnote><footnote></footnote></footnote></text></text></text></text></text></text>	R-2-6 Comment Response R-2-6: The analysis did not identify and disclose a significant regional or localized air quality impact during construction of the Proposed Project. Therefore, additional mitigation is not required under CEQA. Comment Response R-2-7: Caltrans standard specification requires compliance with all Air quality rules and regulations. See Section 2.13, and project features PF-AQ-1 through PF-AQ-3. R-2-6

	Regional Agency Comment R-3	Response to R-3
		Refer to the page F-18 for the letter from Orange County Water District and the response to comment R-3.
From: Sent: To: Subject: Attachments:	Westropp, Marsha <mwestropp@ocwd.com> Thursday, October 24, 2019 2:27 PM D12SR55NorthProject@DOT SR 55 Improvement Project (Between I-5 and SR-91 SR-55 between I-5 and 91.pdf</mwestropp@ocwd.com>	
Follow Up Flag: Flag Status:	Follow up Flagged	
Please accept the a	ttached comment letter on the SR 55 Improvement Project.	
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Ma Ser	rsha Westropp Jior Planner	
187 tel: fax:	on Ward Street, Fountain Valley, CA 92708 (714) 378-8248	
inverter emi	ali: mwestropp@ocwd.com	
Confidential Communic OCWD Confidential Com Privacy Act (18 LISC §§ 2 received Ine electronic in	ation multication: This electronic brankmester, and any documents attached hereis, (a) are protected by the Electronic Communications. 510-2521 (b) may contain confidential intermation: and (c) are for the sola usa of the intended integrated atoms managime entry, there multiple means and which electronic message. Any disclosure, copying, dishubutar, or less of the contentia	
of the internation receiver	a er enroe is attocta prontesta.	
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Regio	Regional Agency Comment R-3 (Continued)				Response to R-3	
DRECTORS DENIS R. BILODEAU, P.E. JORDAN BRANDRAM CATIY CEEM DINA L. NGUYEN, ESO, KILIY F. ROWY, C.E.G., C.H. VIGENT SAMIENTO, ESO, STEPHEN R. SHELDON THI TA ROGRE, C. TOM, P.E. AHMAD ZAHKA October 24, 2019 Charles Baker California Departu Division of Enviro 1750 East 4 th Stra Santa Ana, CA 92	CRANGE CO DRANGE COUR ment of Transportat nmental Analysis set, Suite 100 2705	Commei Since 1933 UNTY WAT Non, District 12	ER DISTRICT	OTICERS President VICENTE SARMENTO First Vice President CATHY GRIEN SECOND VICE President STEPHIN R. SHELOON General Manager MICHAEL R. MARKUS	550. P.E., D.WRE	Response to R-3 Comments from Orange County Water District have been documented as part of the public record. During project design and construction planning, Caltrans will continue to coordinate with Orange County Water District (OCWD) regarding OCSD wells and pipelines in the project area.
Dear Mr. Baker: Subject: Propos (SR-55) The Orange Cour comment on the S State of California produced from th residents in Oran	sed Initial Study/En) Improvement Pro- nty Water District (C State Route 55 Impr a in 1933 to manage e basin is the prima ge County.	nvironmental a oject between DCWD) appreci ovement Proje e the Orange C ry water supply	Assessment for S Interstate 5 and 5 ates the opportuni cd. OCWD was es county Groundwate y for approximately	State Route 55 State Route 91 ty to review and tablished by the er Basin. Water v 2.4 million		
Route 91. OCWI shown on the atta	D monitoring wells the co	hat may be loc ordinates of the	ated within the pro	ject area are illows:		
	WELL NAME SCS-5 SCS-3 SCS-6 SCS-6 SCS-10 SCS-9 SCS-4 SCS-4 SCS-7	LATITUDE 33.78606161 33.78908427 33.7768434 33.78412751 33.78477415 33.78688742 33.78743818 33.79103064 33.78296095	LONGITUDE -117.8295077 -117.8279466 -117.8315557 -117.8271636 -117.8271628 -117.8290678 -117.8267742 -117.8320994			
20 8ox 8300 Fountain Valley, CA 92728-8300	18700 Ward S Fountain Val	Street ley, CA 92708	(714) 378-32 (714) 378-33	00 www 73 fax www	.ocwd.com	

Regional Agency Comment R-3 (Continued)	Response to R-3
Charles Baker October 24, 2019 Page 2 of 2	See page F-18 for response to comment R-3.
Page 2 01 2 OCWD also has a pipeline that crosses State Route 55 and may be in the project area. The location of the pipeline is also shown on the attached map. Please consider the location of these wells and the pipeline in any planning and construction activities related to this project. If you have any questions regarding these comments, please contact Greg Woodside, Executive Director of Planning and Natural Resources at 714-378-3275 or gwoodside@ocwd.com. Sincerely, Michael R. Markus, P.E., D.WRE, BCEE, F.ASCE General Manager Attachment: Map of OCWD Facilities	



	Regional Agency Comment R-4	Response to R-4	
From: Sent: To: Cc: Subject: Attachments:	Regional Agency Comment R-4 Salazar, Cindy <cindy.salazar@ocpw.ocgov.com> Wednesday, October 30, 2019 4:43 PM D12SR55NorthProject@DOT Vuong, Richard; Chang, Joanna County of Orange's Comments on the State Route 55 Improvement Project between I-5 and SR-91 Comment Letter NCL-19-036 SR 55 Improvement Project between I-5 and SR-91.pdf</cindy.salazar@ocpw.ocgov.com>	Response to R-4 Refer to the page F-22 for the letter from County of Orange Department of Public Works, Development Services Division and the response to comment R-4.	
Follow Up Flag: Flag Status:	Follow up Flagged		
Please find the attached and SR-91. Please let me Thank you, Cindy Cindy Solazor, Senior Pla OC Public Works Develo 601 N. Ross Street, Santa CPublic Works Public Works	County of Orange's comment letter on the State Route 55 Improvement Project between I-5 know if you have any questions. Inner opment Services Ana, CA 92701 (714) 667-8870		
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Regional Agency Comment R-4 (Continued)	Response to R-4
CPublicWorks Integrity, Accountability, Service, Trust Shane L. Silsby, Director	The comment from the County of Orange has been documented as part of the public record. Caltrans and OCTA will coordinate with the County of Orange during project development.
October 30, 2019 NCL-19-036	
Charles Baker, Senior Environmental Planner Caltrans District 12, Division of Environmental Analysis 1750 E. Ath Street, Suite 100 Santa Ana, CA 92705	
Subject: Notice of Intent to Adopt a Mitigated Negative Declaration and Notice of Availability of an Initial Study/Environmental Assessment for the State Route 55 Improvement Project between I-5 and SR-91	
Dear Mr. Baker,	
The County of Orange has reviewed the Initial Study/Environmental Assessment for the State Route 55 Improvement Project between I-5 and SR-91 and has no comments at this time. We would like to be advised of further developments on the project.	
If you have any questions regarding these comments, please contact Cindy Salazar at (714) 667-8870 in OC Development Services	
Sincerely, Richard Vuörg, Manager, Planning Division OC Public Works Service Area/OC Development Services 601 N. Ross Street Senta Ana, California 92701 Richard Vuong@ocpw.ocgov.com	
601 N. Ross Street, Santa Ana, CA 92701 www.ospublicworks.com P.O. Box 4048, Santa Ana, CA 92702-4048 714.667.8800 Info@OCPW.osgov.com	

F.7 Local Agency Comments & Responses

	Local Agency Comment L-1	Response to L-1
From: Sent: To: To: C: Subject: Hello SR-55 PDT, The City of Santa Ana received Improvement Project. Below p concern/comment can be added Marrier John Reynolds Address: 2026 Deodar Street Santa Ana, CA 92705 Email: jreynoldk7114@ieloud.et john8506@sbcglobal.net Email correspondence from res "Good morning council memb Street. In our neighborhood wa Deodar Street is used as a shou down. Also if you or a represe Wednesday October 16th at 6: agencies involved. Thank you. Note that as it relates to the res staff will be analyzing to valid Should you have any questions Thank you. Mote that as it relates to the res staff will be analyzing to valid Should you have any questions	<text><text><text><text><text><text><text><text></text></text></text></text></text></text></text></text>	The commenter's concern regarding speeding in their local street has been documented as part of the public record. At the early stage of the project, the project development team (PDT) evaluated potential improvements at the southbound SR 55 on-ramp from eastbound Chapman Avenue on-ramp to southbound SR 55, the PDT looked into potential access restriction at this on-ramp to only allow the on-ramp traffic to access westbound SR 22. However, the access restriction would redirect a large amount of traffic from eastbound Chapman Avenue to use the loop on-ramp in order to access southbound SR 55, which would degrade traffic operations at the southbound SR 55/Chapman intersections and result in significant vehicle queue and consequent safety concern along eastbound Chapman Avenue. Due to the adverse impact to traffic operations and safety, this access restriction option was dropped from further consideration. A detailed discussion is provided in the Project Report, which can be obtained from Caltrans per request. Please see additional discussion in Section 1.3.4, Alternatives Considered But Eliminated from Further Study.

	Local Agency Comment L-2	Response to L-2
From: Sent: To: Subject:	Rafael Cobian <rcobian@anaheim.net> Monday, October 28, 2019 2:34 PM D12SR5SNorthProject@DOT Draft Environmental Document (DED) Request: SR-55</rcobian@anaheim.net>	The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.
To: Subject: Follow Up Flag: Flag Status: Hello, I wold like to request the doct Thank you, Ratael Cobian, PE, LEED GA City Taffe Ingener City of Anabeim Public Work Department Taffe an Anabeim, CA 92005 (714) 765-4991 rodertrikanabeimet) DEBLIC WORKS	D125RSSNorthProject@DOT Draft Environmental Document (DED) Request: SR-55 Follow up Flagged uments. In Transoctation te 278	
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	Local Agency Comment L-3	Response to L-3
		Refer to the page F-26 for the letter from the City of Orange and the response to comment L-3.
From: Sent: To: Subject: Attachments:	Doug Keys <dkeys@cityoforange.org> Wednesday, October 30, 2019 1:54 PM D12SR5SNorthProject@DOT City of Orange Comments on Project IS/DEA SR-55 Improvement Project EIR Comment Letter.docx</dkeys@cityoforange.org>	
Follow Up Flag: Flag Status:	Follow up Flagged	
Hello: Attached are the project For any questions or con Thank you	comments for the SR-55 Improvement Project IS/DEA. nments, please contact Doug Keys at 714-744-5541.	
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Local Agency Comment L-3 (Continued)	Response to L-3
Local Agency Comment L-3 (Continued) The City of Orange has been a member of the Project Design Team (PDT) for the SR-55 Improvement Project since 2017. During that time, the PDT looked at a variety of potential improvement options that would be incorporated into the recommended project alternative. Each option was evaluated for its impacts to the mainline facility as well as the surrounding circulation system. Through this evaluation process, some options were eliminated from further consideration because it either did not accomplish initial project goals for the mainline facility, or they had a negative impact on the surrounding circulation system. One of the improvement options evaluated was the relocation of the southbound SR-55 off- ramp for Lincoln Avenue to join the southbound Lincoln on-ramp at its existing location. This consolidation of the off-ramp with the on-ramp would eliminate a traffic signal (Tustin/SR-55 on-ramp) and create a full interchange at the on-ramp location. The PDT spent a lot of time discussing the geometrics of this newly created interchange. On the west side of the interchange, there is an existing driveway the serves both the Vons Shopping Center and the Villa Ford car dealership. As a part of this project, one of the objectives for the City of Orange was to ensure that existing businesses in Orange would not be negatively affected by the project. In fact, the IS/DEA	Response to L-3 The comments from the City of Orange have been documented as part of the public record. Caltrans and OCTA will coordinate with the City of Orange during the Preferred Alternative design development.
As a part of this project, one of the objectives for the City of Orange was to ensure that existing businesses in Orange would not be negatively affected by the project. In fact, the IS/DEA recognizes this effort by reiterating city policies that are called out in the City of Orange General Plan. Page 2.1-7 calls out Policy 2.5 of the Orange General Plan Circulation Element that states "Ensure that transportation facilities and improvements do not degrade the quality of Orange's commercial and residential areas." After extensive discussions, the PDT chose an option for the SR-55 Ramps/Lincoln Avenue interchange that would maintain the existing commercial driveway on the west side of the	
intersection along with the northbound protected left-turn phasing. This selected geometric option was added to the environmental documents as well as presentation graphics used in the project's Public Hearing. Prior to the public hearing, staff for the City of Orange met with representatives for Villa Ford to discuss the recommended intersection geometrics. The graphics presented to Villa Ford showed the same intersection geometrics as the graphics that were used in the Public Hearing. The City of Orange has made a good faith effort to share the recommended intersection geometrics with affected commercial property owners.	
As the SR-55 Improvement Project moves forward towards a Preferred Alternative, the City of Orange could support the project alternative that was presented at the Public Hearing on October 16, 2019. Any changes to the alternative that was presented at the Public Hearing would need to be reevaluated by the City of Orange and presented to affected stakeholders for their questions and concerns.	

F.8 Public Hearing Comment Cards & Responses

Comment	Letter CC-1	Response to Comment Card CC-1
SR-55 (I-5 to SR-91) IMPROVEMENT PROJECT Thank you for your interest in the State Route 55 (SR-55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR-91). The project proposes to add one general purpose lane in each direction on SR-55 between I-5 and SR-22, and provide operational improvements at various locations on SR-55 between SR-22 and SR-91. The purpose of the proposed project is to improve mobility, reduce congestion, increase freeway capacity and improve traffic operations.	CONTACT INFORMATION DATE: \U/\U/\Q ADDRESS: 592. D. Yandy 55 ADDRESS:	The commenter's concern regarding the transparency of the environmental impacts has been documented as part of the public record. Various environmental resource areas were analyzed in detail through technical studies and information is included in the environmental document, which was available for public review and comment from September 30, 2019 through October 30, 2019.
Interpretation, increase freeway capacity and improve Preferred Contact Method: (Please check one) Variable for every capacity and improve Preferred Contact Method: (Please check one) VOUR COMMENTS/QUESTIONS (Deadline to comment is Oct. 30, 2019) Image: Ima		

Comment Letter CC-2	Response to Comment Card CC-2
SR-55 (1-5 to SR-91) IMPROVEMENT PROJECT SR-55 (1-5 to SR-91) IMPROVEMENT PROJECT Source of the proposed in the state floate 55 (1-5) and State Route 91 (SR-90). The project proposes to add one general purpose lane in each direction on SR-55 between 1-65 and SR-22, and provide operational improvements at various location on SR-55 between SR-20 and SR-91. The project bit to improve mobility, reduce congestion, increase freeway capacity and improve traffic operations. YOUR COMMENTS/OUESTIONS (Deadline to comment is Oct. 30, 2019)	The commenter's concern regarding the freeway ramps and local intersections have been documented as part of the public record. Chapter 1 of the Draft IS/EA includes a discussion on the additional alternatives that were previously considered to improve operations within the project area. However, after consideration of Caltrans design standards, environmental impacts, right-of-way requirements, and traffic safety and operations, the alternatives (Design Options), described in in Section 1.3.5, were considered but eliminated from further discussion in the Draft Initial Study/Environmental Assessment. Section 1.3.4 discusses the process in determining the Preferred Alternative for project construction. The environmental document can be obtained from contacting Caltrans District 12. The Meats Avenue Interchange Project is a city project that is not scheduled to be constructed until after the opening of the SR 55 Improvement Project.



SR-55 (I-5 to SR-91) IMPROVEMENT PROJECT

Thank you for your interest in the State Route 55 (SR-55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR-91).

The project proposes to add one general purpose lane in each direction on SR-55 between I-5 and SR-22, and PHONE: 714 - 785 - 9198 provide operational improvements at various locations EMAIL: dean thomas 65 @ gmail.com on SR-55 between SR-22 and SR-91. The purpose of Are you a local business owner? Ares DNO on SR-55 between SR-22 and SR-91. The purpose of the proposed project is to improve mobility, reduce congestion, increase freeway capacity and improve traffic operations.

YOUR COMMENTS/QUESTIONS (Deadline to comment is Oct. 30, 2019)

M. only concern is that the West bound
traffic on Katella be stopped far enough back
that a person making a left turn from the
South bound exit off the 55 the has enough
room to make the turn as well as the West
bound stopped cars not be dipped. I know that
you have run simulations wil tracks, but the
real concern is the guy driving a sports car
(or whatever) Who is trying to run a yellow
light at the bottom of the ramp and make
a left onto Katella. I do see that you have
pushed things back, but please if possible some
of you who are planning this drive (for real-
no simulation) that off ramp and tob serve the
potential problem, Other than that I have
no concerns. Cheers! For for

Thank you for your input on the SR-55 (I-5 to SR-91) Improvement Project. To provide additional comments or questions, email D12SRSSNorthProject@dot.ca.gov



CONTACT INFORMATION DATE: 10-16-2019 NAME: PEAN Thomas ADDRESS: 2346 E. Vanowen are CITY: Orange STATE: CAZIP: 92867 Business Name: Rear Thomas Photography Preferred Contact Method: (Please check one)

The commenter's concern regarding westbound traffic near the Katella Avenue southbound off-ramp of SR-55 have been documented as part of the public record. The Build Alternative includes additional capacity on the southbound SR-55 Katella Avenue off- and on-ramps. The area you have specified would include an additional lane to the southbound SR-55 Katella Avenue off-ramp. In order to accommodate this new lane and its turning radius onto eastbound Katella Avenue, the

Response to Comment Card CC-3

pavement markings for stopped westbound traffic would be moved a few feet back from its current location and the signal timing will be modified to accommodate the proposed design. Your concern regarding speeding vehicles in this area will be forwarded to the City of Orange for potential police enforcement.

Comment Letter CC-4	Response to Comment Card CC-4
<image/> <image/>	The commenter's concern regarding the air and noise pollution have been documented as part of the public record. The proposed project would add one northbound general-purpose lane between I-5 and SR 22 and one southbound general-purpose lane between I-5 and SR 22, provide additional capacity on the southbound SR 55 Katella Avenue off- and on-ramps, and relocate the southbound SR 55 Lincoln Avenue off- and on-ramps, and relocate the southbound SR 55 Lincoln Avenue off- and on-ramps, and relocate the southbound SR 55 Lincoln Avenue and along SR 55 between La Veta and Chapman Avenue (Figure 1.3-1), and this area is beyond the limits of the noise study area. Because the area is beyond the limits of the noise study area, no noise barriers would be identified. The Noise Study Report (NSR) was prepared based on current Caltrans guidelines and procedures from the May 2011 Caltrans Traffic Noise Analysis Protocol and the September 2013 Technical Noise Supplement. Caltrans has adopted Federal Highway Administration (FHWA) guidance for evaluating Mobile Source Air Toxics (MSAT) emissions. As disclosed in the IS/EA and the Air Quality Report, implementation of the Proposed Project would result in daily MSAT emissions of lesser magnitude than the Baseline (2017) emissions and the No-Build Alternative emissions in both the opening year (2035) and the design year (2055). Thus, implementation of the Proposed Project would reduce MSAT emissions, resulting in lower concentrations at receptor locations. The analysis also did not identify a significant regional or localized air quality impact associated with construction of the Proposed Project. Specific air quality and noise technical studies were completed for the project. Please refer to the summary of the analysis and impacts in Chapter 2.13 (Air Quality) and Chapter 2.14 (Noise).

Comment	Letter CC-5	Response to Comment Card CC-5
SR-55 (I-5 to SR-91) IMPROVEMENT PROJECT Thank you for your interest in the State Route 55 (SR-55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR-91). The project proposes to add one general purpose lane in each direction on SR-55 between I-5 and SR-22, and provide operational Improvements at various locations on SR-55 between SR-22 and SR-91. The purpose of the proposed project is to improve mobility, reduce congestion, increase freeway capacity and improve traffic operations. YOUR COMMENTS/QUESTIONS (Deadline to con I. Feel the Project could be d There is very little connection " example, the Lincolog / Tustin in an "early action" package that o perations.	CONTACT INFORMATION DATE: Oct 16, 2019 NAME: George Dere ADDRESS: 3.121 H Bokelw CITY: Oreage STATE: A 2019 PHONE: EMAIL: PHONE: Preferred Contact Method: (Please check one) Email: Options: mment is Oct. 30, 2019) esign ed. and Const ruited in pieces. sign ed. and Const ruited in pieces. between the various pieces. For neroscition: minerot is Show improve ment; coull be would Show esign ed. Show esign ed. Show improved traffic	The commenter's recommendation of phasing for design and construction of the project have been documented as part of the public record. The Lincoln/Tustin intersection improvements are currently planned for the first part of project construction. Additional traffic projects are within the project limits in various phases and are listed in the Project Report. Detailed stage construction plans will be prepared during the final design phase. Information on potential staging of project construction is discussed in the Project Report in Attachment H Conceptual Stage Construction Plans. A copy of the Project Report can be obtained from Caltrans.



SR-55 (I-5 to SR-91) IMPROVEMENT PROJECT

Thank you for your interest in the State Route 55 (SR-55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR-91).

The project proposes to add one general purpose lane in each direction on SR-55 between I-5 and SR-22, and provide operational improvements at various locations on SR-55 between SR-22 and SR-91. The purpose of the proposed project is to improve mobility, reduce congestion, increase freeway capacity and improve traffic operations.



CONTACT INFORMATION

ATE: 10.16.161
AME: T-ILCR- GATES
DDRESS: 582 N HANDY ST
ITY: ORANGE STATE: O ZIP: 92864
HONE: 909 896 2048
MAIL: MICHTHELANDTYLER & GMAIL CON
re you a local business owner? 🗖 Yes 🛛 No
usiness Name:
referred Contact Method: (Please check one)
Email: ABOVE Phone:

YOUR COMMENTS/QUESTIONS (Deadline to comment is Oct. 30, 2019)

IMPEQUENTS LOOK and AREAL THE NEW LINCOLN OFFRAME IS THE LUST MOBILED, MULTICLE I AM DISATIONTED THE SE CHARAP ISN'T PECEDIVING IMPERATION. MY BIGGET CONCEPN IS THAT THIS ADDRESSES THE SHORT TERM PRASMA, AND NOT THE LONG TERM. AS MORE PEOPLE MORE TO CRANET COUNTY AND NOT THE LONG TERM. AS MORE PEOPLE MORE TO CRANET COUNTY AND NOT THE LONG TERM. AS MORE PEOPLE MORE TO CRANET MORE, AND HOUTER DENSITY HAVING, PEPLIATION CRANES, WE PEALLY MEED TO LOCK TOWARD EFFICIENT MATS TRUNCT, SUCH AS RAIL, TO AMERINATE OUR PEADS. BY THE TIME THIS PROJECT IS COMPLETED, IT WILL BARGEN HAVE, ATHELE TAND ARE DETELMENTAL. TO OUR OTHER, AND AS A YONG ARULT, I WANT. TO MAKE SUPE JULYE BUILDING FOR BOTH THE SHOP AND LONG TERM. AND BARE MITS TRANSIT OUR OTHERS MY AREC, WOULD PREFER PEULATICE AND SAFE MITS TRANSIT OUR OURS, AND THE CUPPENT BUI TRUTTED TON'T MORE THOSE NEEDS

Thank you for your input on the SR-55 (I-5 to SR-9i) Improvement Project. To provide additional comments or questions, omail D125R55NorthProject@dot.ca.gov.

Response to Comment Card CC-6

The commenter's concerns with the Lincoln Avenue on-ramp and the long-term impacts of the project has been documented as part of the public record. The need for this project originated from the projected and realized growth of the region, as well as the delays that are being experienced on SR-55. The population of Orange County is expected to increase from 3.1 million persons in 2012 to nearly 3.5 million persons in 2040, an increase of approximately 13 percent. Growth in Riverside County is projected to increase at a faster pace, with the population in that county projected to increase from 2.2 million in 2012 to 3.2 million in 2040, an increase of approximately 45 percent. This regional growth will continue to place a high demand on SR 55 by Orange and Riverside County residents traveling to jobs, retail, and other destinations in central and coastal Orange County. Existing traffic volumes, traffic congestion, and travel delay along the SR 55 corridor are anticipated to grow as a result of forecasted increases in population, housing, and employment. The Build Alternative would improve traffic operational service and reduce congestion in the long term.

The project is consistent with the state, regional, and local programs, plans, and policies, including the SCAG 2016-2040 RTP/SCS (2016b), OCTA 2018 Long Range Transportation Plan, OCTA 2015 Orange County Congestion Management Program, Orange County General Plan (2005), and general plans of the local jurisdictions that comprise the project study area. In addition to these plans, the Build Alternative would provide substantial traffic operational benefits to the study corridor under both opening year (2035) and design year (2055) conditions, by improving freeway and arterial operations, reducing traffic congestion, serving more people through the network, and providing noticeable delay time reduction to commuters in the study area. As presented in Section 2.5 (Traffic and Transportation), the Build Alternative results in better travel times than the No Build Alternative. Compared to the No Build Alternative., The Build Alternative would reduce northbound and southbound SR 55 travel time by 4 and 26 percent in AM Peak, and by 1 and 13 percent in PM Peak, under Design Year 2055.



SR-55 (I-5 to SR-91) IMPROVEMENT PROJECT

Thank you for your interest in the State Route 55 (SR-55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR-91).

The project proposes to add one general purpose lane in each direction on SR-55 between I-5 and SR-22, and provide operational improvements at various locations on SR-55 between SR-22 and SR-91. The purpose of the proposed project is to improve mobility, reduce congestion, increase freeway capacity and improve traffic operations.

CONTAC	
DATE:	10/16/19
NAME:	RobertA Nieto
ADDRES	5: 2145 E. SACKSON AVE
CITY: C	range STATE: CAZIP: 92-867
PHONE:	0
EMAIL:	locy 2 KO hotmail. com
Are you a	local business owner? STYes INo
Business	Name: Bountiful Health
Preferred	Contact Method: (Please check one)
Email:	D Phone:

OCGO M 🖤

YOUR COMMENTS/QUESTIONS (Deadline to comment is Oct. 30, 2019)

Lincoln South Bound off RAMP Proposal - seems reasonable ONK people within off at proposed site then right to catte licht Nohl Ranch 10 proceed + torn Left time how many Need that direction it could le concested that turn light.

Katella exit may by putting wanten pro 440 55-North That Tustin/ Katella interspection seems like it would ramp congested at make et very michaels & Petsmant customers to into the parking Katolla - South oll camp : good idea Left lanes off 2 ant

Thank you for your input on the SR-55 (I-5 to SR-91) Improvement Project. To provide additional comments or guestions, email D125R55NorthProject@dot.co.oo

Response to Comment Card CC-7

The commenter's concerns regarding the Lincoln southbound off-ramp and the Katella Avenue off-ramp of the project have been documented as part of the public record.

For Lincoln southbound off-ramp, traffic study indicates that traffic getting off from the new off-ramp and then getting onto westbound Lincoln Avenue is relatively small. In addition, southbound Tustin Street would anticipate traffic reduction due to traffic diversion resulted from relocation of the Lincoln off-ramp; therefore, more green time would be allocated from the southbound Tustin Street through movement to northbound left-turn movement. The proposed improvement is not anticipated to impact this particular movement.

For Katella Avenue off-ramp, the peak hour traffic volumes on eastbound Katella Avenue are fairly balanced between the through and right-turn movements, which helped to justify the proposed lane balancing improvement to convert the 3rd through lane to the 2nd right-turn lane on eastbound Katella Avenue. Although eastbound through movement would have one lane reduction, the additional capacity on westbound left-turn and southbound off-ramp movements at this intersection would help to allocate more green time to the eastbound through movement. Traffic study shows the proposed alternative would improve operations at both SB 55/Katella Avenue and Tustin Street/Katella Avenue intersections.

Comment Letter CC-8		Response to Comment Card CC-8
SR-55 (1-5 to SR-91) IMPROVEMENT PROJECT Thank you for your interest in the State Route 55 (SR-55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR-91). The project proposes to add one general purpose lane in each direction on SR-55 between I-5 and SR-22, and provide operational improvements at various locations on SR-55 between SR-22 and SR-91. The purpose of the proposed project is to improve mobility, reduce congestion, increase freeway capacity and improve traffic operations. YOUR COMMENTS/GUESTIONS (Deadline to co Thank you for the signalized infec 9th 5th and others The followay inferchange ramps have soft biogedists. <u>ER 17th 5th to SB 5R-55</u> <u>EB</u> <u>FB 17th 5th to SB 5R-55</u> <u>UB</u> <u>VB 17th 5th to SB 5R-55</u> <u>SB 5R-55</u> <u>to WB 17th</u> <u>Flease use they unique apperturity to</u> <u>tuloy's standards for perturity to</u> <u>in those arrees</u> , Thank you for your input on the SR-55 to 5R-90 Improvement Project. To Jacks	CONTACT INFORMATION DATE: NAME: ADDRESS: CITY: STATE: ZIP: PHONE: EMAIL: Are you a local business owner? Yes No Business Name: Preferred Contact Method: (Please check one) I Email: Preferred Contact Method: (Please check one) Contact Not Solver Lincolny Charge: Coursess Name: Preferred Contact Method: (Please check one) Contact Method: (Please check one) Contact Not Solver Lincolny Charge: Coursess Name: Preferred Contact Method: (Please check one) Contact Not Solver Lincolny Charge: Coursess Name: Preferred Contact Method: (Please check one) Contact Not Solver Lincolny Charge: Coursess Name: Preferred Contact Method: (Please check one) Contact Not Solver Lincolny Charge: Coursess Name: Preferred Contact Method: (Please check one) Contact Not Solver Lincolny Charge: Coursess Name: Preferred Contact Method: (Please check one) Contact Not Solver Lincolny Charge: Coursess Name: Contact Not Solver Lincolny Coursess Name: Contact Not Solver Lincolny Coursess Name: Contact Not Solver Lincolny Coursess Name: Coursess	 The commenter's concern regarding safety for pedestrians and bicyclists has been documented as part of the public record. Any new ramp construction at these intersections would meet current ADA guidelines. Pedestrian and bicycle lane facilities that would be affected by the Build Alternative would be restored after project construction and would be built in accordance with current Caltrans Safety and Design Standards. Project Feature PF-T-1 would require a Transportation Management Plan (TMP) to be developed during final design and implemented by the construction contractor during construction. The purpose of the TMP is to address the short-term traffic and transportation impacts during construction of the project. The objectives of the TMP are to: Maintain traffic safety during construction Effectively maintain an acceptable level of traffic flow throughout the transportation system during construction Minimize traffic delays and facilitate reduction of the overall duration of construction activities Minimize detours and impacts to pedestrians and bicyclists Foster public acceptance of construction of the project and the TMP measures The TMP will contain, but not be limited to, the following elements intended to reduce traveler delay and enhance traveler safety. These elements will be refined during final design and incorporated in the TMP for implementation during project construction? Public Awareness Campaign; Traffic System and Signing Package; Construction Zone Enforcement Enhancement Program (COZEEP); Traffic Management Team; Advance Transportation Management System (ATMS).



SR-55 (I-5 to SR-91) IMPROVEMENT PROJECT

Thank you for your interest in the State Route 55 (SR-55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR-91).

The project proposes to add one general purpose lane in each direction on SR-55 between I-5 and SR-22, and provide operational improvements at various locations on SR-55 between SR-22 and SR-91. The purpose of the proposed project is to improve mobility, reduce congestion, increase freeway capacity and improve traffic operations.

Local Tax Dollars at Work OCTA Calbrans	OSCGO		Caltrans
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CONTACT INFORMATION

DATE: 10/19/2019
NAME: Melinda Hasenohrc
ADDRESS: 4730 E Blue Bird Ave
CITY: Orange STATECAZIP: 92869
PHONE: 0714-955-1205
EMAIL: OZhasen Ogmail.com
Are you a local business owner? 🗖 Yes 🖾 No
Business Name:
Preferred Contact Method: (Please check one)
DEmail: Phone:

YOUR COMMENTS/QUESTIONS (Deadline to comment is Oct. 30, 2019)

Operational improvement suggestion:
Add an improvement to the Chapman on ramp
ading south on the 55.
Sheads a alord in the full coincide south
Copie as a fear of the ray going source
wanting the 22 we moving ove to meright
while people heading & south tran the
Chapman and ramp are moving left onto
the same lanes. That definitely needs improvement
to pase conception
\mathbf{O}
The local sector as the CD EE (/ E to CD (1) Improvement Project To provide additional comments or questions email D12SR55NorthProject@dot.ca.go
Linglik And tot Andre unber on the number of dig and all high passing in the and individue comments of dependent of the president of the Laboration and the second of the Laboration and the

Response to Comment Card CC-9

The commenter's concern regarding the Chapman Avenue southbound SR-55 on-ramp has been documented as part of the public record. At the early stage of the project, the project development team (PDT) evaluated potential improvements at the southbound SR 55 on-ramp from eastbound Chapman Avenue. To prevent the weaving from eastbound Chapman Avenue on-ramp to southbound SR 55, the PDT looked into potential access restriction at this on-ramp to only allow the on-ramp traffic to access westbound SR 22. However, the access restriction would redirect a large amount of traffic from eastbound Chapman Avenue to use the loop on-ramp in order to access southbound SR 55, which would degrade traffic operations at the southbound SR 55/Chapman intersections and result in significant vehicle queue and consequent safety concern along eastbound Chapman Avenue. Due to the adverse impact to traffic operations and safety, this access restriction option was dropped from further consideration. Please see additional discussion in Section 1.3.4, Alternatives Considered But Eliminated from Further Study.

Comment L	.etter CC-10	Response to Comment Card CC-10
SR-55 (I-5 to SR-91) IMPROVEMENT PROJECT Thank you for your interest in the State Route 55 (SR-55) Improvement Project between Interstate 5 (I-5) and State Route 91 (SR-91). The project proposes to add one general purpose lane in each direction on SR-55 between I-5 and SR-22, and provide operational improvements at various locations on SR-55 between SR-22 and SR-91. The purpose of the proposed project is to improve mobility, reduce congestion, increase freeway capacity and improve traffic operations. YOUR COMMENTS/QUESTIONS (Deadline to con <i>To W</i> how it <i>May concern</i> . <i>I</i> veside on <i>Deodaw</i> st., bet Ave. Our neighborhood is us <i>Morning</i> and atterneous to use 55 firmy. <i>I</i> and veguessing <i>vehicles down, from</i> the C <i>that</i> call trans can give to greatly appreciated. The fir Street is in the County, could ins <i>county</i> end of the street <i>Than</i> you <i>Mum MyWM</i>	CONTACT INFORMATION DATE: 10-16-2019 NAME: TOLU Rey 101ds ADDRESS: 2026 N. Deodar street CITY Santa Augustons of performance PHONE: 714-851-7170 EMAIL: John 8506@sbcgløbal. uet Are you a local business owner? I Yes ENO Business Name: Preferred Contact Method: (Please check one) MEEMAIL: John 8506@sbcgløbal. uet Are you a local business owner? I Yes ENO Business Name: Preferred Contact Method: (Please check one) MEEMAIL: John 8506@sbcgløbal. uet Are you a local business owner? I Yes ENO Business Name: Preferred Contact Method: (Please check one) MEEMAIL: John 8506@sbcgløbal. uet Are you a local business owner? I Yes ENO Business Name: Preferred Contact Method: (Please check one) MEEMAIL: John 8506@sbcgløbal. uet Are you a local business owner? I Yes ENO Business Name: Preferred Contact Method: (Please check one) MEEMAIL: John 8506@sbcgløbal. uet Are you a local business owner? I Yes ENO Business Name: Preferred Contact Method: (Please check one) MEEMAIL: John 8506@sbcgløbal. uet Are you a local business owner? I Yes ENO Business Name: Preferred Contact Method: (Please check one) MEEMAIL: John 8506@sbcgløbal. uet Are you a local business owner? I Yes ENO Business Name: Preferred Contact Method: (Please check one) MEEMAIL: John 8506@sbcgløbal. uet Store of Deodars at 171h Et would also be appreciated tall speed bumps out ue Plane: John 8506@sbcgløbal. uet MEEMAIL: Speed bumps out ue Plane: John 8506@sbcgløbal. uet Are you al also be appreciated MEEMAIL: Speed bumps out ue Plane: John 8506@sbcgløbal. uet Plane: John 8506@sbcgløbal. uet Plane: John 8506@sbcgløbal. uet MEEMAIL: John 8506@sbcgløbal. uet Plane: John 8506@sbcgløbal. uet MEEMAIL: Joh	The commenter's concern with speeding on Deodar Street has been documented as part of the public record and will be shared with the City of Santa Ana Public Works Department, who has jurisdiction in this local area .

	Court Reporter Transcript TR-1		Response to TR-1
Atkinson-Baker, Inc.			Comment Response TR-1-1:
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	<text><text><text><text><text><text></text></text></text></text></text></text>	TR-1-1	The commenter's concern regarding the Chapman Avenue southbound SR-55 on-ramp has been documented as part of the public record. At the early stage of the project, the project development team (PDT) evaluated potential improvements at the southbound SR 55 on-ramp from eastbound Chapman Avenue. To prevent the weaving from eastbound Chapman Avenue on-ramp to southbound SR 55, the PDT looked into potential access restriction at this on-ramp to only allow the on-ramp traffic to access westbound SR 22. However, the access restriction would redirect a large amount of traffic from eastbound Chapman Avenue to use the loop on-ramp in order to access southbound SR 55, which would degrade traffic operations at the southbound SR 55/Chapman intersections and result in significant vehicle queue and consequent safety concern along eastbound Chapman Avenue. Due to the adverse impact to traffic operations and safety, this access restriction option was dropped from further consideration. Comment Response TR-1-2: The commenter's concern with merging traffic at the SR 55 and SR 22 interchange has been documented as part of the public record. The Build Alternative adds one general-purpose lane in each direction along SR 55 between just north of the I-5/SR 55 Interchange and the SR 55/SR 22 Interchange. Comment Response TR-1-3: The commenter's concern with merging traffic at the SR 55 and SR 22 interchange has been documented as part of the public record.

F.9 Public Hearing Transcript Comments & Responses

Court Reporter Transcript TR-2		Response to TR-2
	Atkinson-Baker, Inc.	Comment Response TR-2-1:
r	www.depo.com	The commenter's request has been added to the public record and
1 2	Orange, California; Wednesday, October 16, 2019 6:00 p.m.	forwarded to the project sponsor (Orange County Transportation Authority [OCTA]).
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	STEVEN LICHTEN: When they get it in the design phase, the Chapman Avenue on ramp to the 55 South, there's a big congested choke point because it's merging, or crosses over with the merging lanes to the 22 Westbound. It's a big choke point for the freeway, and it's a potential for accidents. There's people crossing over to try to get to the 22 West, and people trying to get on the 55 South crossing over. It's not addressed in the design phase. They really need to look at that. So if they're looking for funding, it's not going to be cheap. It's just not safe. The ones they are looking at, of all of them, up and down, that's the least safe. So the ones they're looking at, maybe they're making more volume going through, but to find a way to make it easier to merge in. You will have to get across two lanes in a shot amount of time. MR. SANTUCCI: I would like to see the eastbound exit of the 55 freeway onto Chapman Avenue get a yield right-of-way sign, unless people on Chapman have to move	Both eastbound Chapman Avenue and northbound SR 55 off-ramp carry a substantial amount of traffic through this intersection. Eastbound Chapman Avenue has three though lanes, which merge with the two lanes from the northbound off-ramp. A portion of traffic from northbound off-ramp would remain on the outside lane to continue and make a right turn onto Yorba Street, so that traffic would not generate the weaving issue with traffic from eastbound Chapman Avenue. Currently three warning signs are placed at the northbound off-ramp where it merges with the eastbound Chapman Avenue, including two advance pedestrian warning signs (W 11-2) on each side of the road and one added lane warning sign (W 4-3). The advance pedestrian warning signs are used to warn motorists of possible pedestrian conflicts at the crosswalk markings. The added lane warning sign provides warning to the off-ramp traffic to look for traffic from eastbound Chapman Avenue and make cautious lane change.
L	4 Transcript of Proceedings October 16, 2019	

Atkinson-Baker, Inc. www.depo.com		See page F-38 for response to TR-2-1.
over to lanes in order to take a right turn on Yorba. And	1	
we are bound to hit a pedestrian there because there is a		
crosswalk and that doesn't seem to stop anyone going		
northbound on the 55.		
And when they come off of the freeway, they come	- TR-2-1	
off the freeway and they just head right across Chapman.		
So not only are we dodging the off-ramp, but we have to		
make sure that we get over on the right-hand side to make		
it onto Yorba.	1	
5	1	
Transcript of Proceedings		
	Addingon-Baker, Inc. www.depo.com over to lanes in order to take a right turn on Yorba. And we are bound to hit a pedestrian there because there is a crosswalk and that doesn't seem to stop anyone going northbound on the 55. And when they come off of the freeway, they come off the freeway and they just head right across Chapman. So not only are we dodging the off-ramp, but we have to make sure that we get over on the right-hand side to make it onto Yorba. Transcript of Proceedings October 16, 2019	Atison-Baker, Inc. www.depo.com over to lanes in order to take a right turn on Yorba. And we are bound to hit a pedestrian there because there is a crosswalk and that doesn't seem to stop anyone going northbound on the 55. And when they come off of the freeway, they come off the freeway and they just head right across Chapman. So not only are we dodging the off-ramp, but we have to make sure that we get over on the right-hand side to make it onto Yorba. The 2-1

Court Reporter Transcript TR-3			Response to TR-3
	Atkinson-Baker, Inc.		Comment Response TR-3-1:
1 2 3 4 5	Orange, California, Wednesday, October 16, 2019 6:00 p.m. MR. MONTOYA: No complaint. I'm here. The	1	The commenter's concern regarding the expansion of the project footprint and new right of way has been documented as part of the public record. The proposed project would not include expansion outside of the ROW requiring any permanent property acquisition or relocation. Comment Response TR-3-2: This comment has been forwarded to OCTA so they can contact and
6 7 9 10 11 12 13 14 15	<pre>girl said, if I have a good comment, that will help you guys. I'm mainly concerned I live right next to the freeway. At this time, I've been told that it's not going to expand. Not to be expanded, no right-of-way. So I'm for all of that. We need the traffic. I live next door, so I know we need more lanes. So I'm for it. I'm pro. As long as they don't later decide to go to expand it. It's going to take my house. This is my second, third I guess, I went to the last two meetings. And they said they would know</pre>	• TR-3-1	add the commenter to the e-mail blasts and refer the commenter to the OCTA website for the proposed project to allow the public to stay informed. OCTA will continue publishing public notice of the project in newspaper advertisements, media advisory, direct mail, fliers, extended outreach, announcements and briefings, and electronic notices.
16 17 18 19 20 21 22 23 24 25	more this year. So that's why I'm here. I've already contacted them. And they told me that they I want to just confirm this. My main thing is, I want to be in contact with my e-mail, they have my e-mail, if they decide to expand the freeway. MR. MICHALAK: The concerns we have has been that any sound wall on the Chapman and 55, hasn't been in any of the plans. But the additional traffic that we're going to have is going to increase noise and increase pollution, which is going to cause local	TR-3-2	
	Transcript of Proceedings October 16, 2019		

	Court Reporter Transcript TR-4 (Continued)		Response to TR-4
1 2 3 4 5 6	Court Reporter Transcript TR-4 (Continued) Atkinson-Baker, Inc. www.depo.com problems for our house, our neighbors' house, while trying to alleviate problems for those that don't live in the area. So it's helping those that are not in the area, but not really helping us. The Chapman intersection isn't even on any of the plans, so any bottlenecking is] TR-4-1	Response to TR-4Comment Response TR-4-1:See page F-41 for response to TR-4-1.Comment Response TR-4-2:The commenter's concern regarding the environmental and noise footprint of the project have been documented as part of the public record. OCTA completed a feasibility study for this section of the SR 55 in 2010, and several improvements were identified and evaluated in that study. A Project Study Report/Project Development Support
7 8 9 10 11 12 13 14 15	still going to be there. And we're still going to deal with the sound that exists with additional sounds. And no plans right now for any sound barriers to help us. We have heard that the benefits are going to be great for those traveling on the 55, but not those who live near the 55. We've never heard that concept. That has not been on any of the papers. And all the comments that we've gotten from anyone has been, make sure you comment	 TR-4-2 (PSR/PDS) was approved in January 2015. The PSR/PDS key findings noted that the Build Alternatives are expected to provide improvements in capacity on the southern part of the corridor and traffic operations improvements within the northern part of the corridor throughout the project limits. The nearest project improvements are located south of the SR-55/SR-22 interchange. Sound walls are primarily implemented to abate noise impacts from proposed freeway improvements. There are no noise barriers proposed for the area of SR-55 and Chapman Avenue freeway ramps since there are no project improvements planned for this area. 	
16 17 18 19 20 21 22 23 24 25	on the sound, and we'll address it later. (Public meeting concluded at 8:00 p.m.) Transcript of Proceedings October 16, 2019	1	Comment Response TR-4-3: As noted in Comment Response TR-4-2, the commenter's concern regarding noise has been documented for the public record. The project proposes to improve the SR-55 freeway and the Draft Initial Study/Environmental Assessment is a detailed environmental analysis of the potential impacts from these freeway improvements. Though the commenter's concerns with noise deriving from the existing freeway corridor are important and reasonable, this project and environmental document is limited to evaluating impacts from the Build Alternatives.

Public Comment PC-7	Response to PC-7
<text><text><text><text></text></text></text></text>	The commenter's support and concern regarding the Chapman Avenue southbound SR-55 on-ramp have been documented as part of the public record. At the early stage of the project, the project development team (PDT) evaluated potential improvements at the southbound SR 55 on-ramp from eastbound Chapman Avenue on-ramp to prevent the weaving from eastbound Chapman Avenue on-ramp to southbound SR 55, the PDT looked into potential access restriction at this on-ramp to only allow the on-ramp traffic to access westbound SR 22. However the access restriction would redirect a large amount of traffic from eastbound Chapman Avenue to use the loop on-ramp in order to access southbound SR 55, which would degrade traffic operations at the southbound SR 55/Chapman intersections and result in significant vehicle queue and consequent safety concern along eastbound Chapman Avenue. Due to the adverse impact to traffic operations and safety, this access restriction option was dropped from further consideration. A detailed discussion is provided in the Project Report, which can be obtained from Caltrans per request. Please see additional discussion in Section 1.3.4, Alternatives Considered But Eliminated from Further Study.
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F.10 Public Comments by Email & Responses

Public Comment PC-13	Response to PC-13
Public Comment PC-913	Response to PC-13 The commenter's opposition to the project and concerns with noise and air pollution have been documented as part of the public record. The noise impact of the proposed project is addressed in the Noise Study Report (NSR) that was prepared based on current Caltrans guidelines and procedures in the May 2011 Caltrans Traffic Noise Analysis Protocol and the September 2013 Technical Noise Supplement. Traffic noise impacts occur when traffic noise approaches or exceed the Noise Abatement Criteria (NAC) or when a substantial noise increase would occur from the existing circumstances without project to design-year with project.
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	Public Comment PC-14	Response to PC-14
From: Sent: To: Subject:	Herb Cooley <hccooley1@yahoo.com> Tuesday, October 15, 2019 8:40 PM D125R55NorthProject@DOT Opposed to 55 Widening</hccooley1@yahoo.com>	The commenter's concern regarding freeway noise has been documented as part of the public record. The Noise Study Report (NSR) was prepared based on current Caltrans guidelines and procedures in the May 2011 Traffic Noise Analysis Protocol. Traffic noise impacts occur when traffic noise approaches or exceed the
We are unable to sleep n Thank you,	ow due to the freeway noise. Please find another alternative to expanding the 55.	Noise Abatement Criteria (NAC) or when a substantial noise increase would occur from the existing circumstances without project to design- year with project.
Herb Cooley 30 year resident of Orang	je -	
Sent from Yahoo Mail on	Android	
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	Public Comment PC-17	Response to PC-17
		The commenter's concern with speeding on Deodar Street has been documented as part of the public record and will be shared with the City of Santa Ana Public Works Department, who maintains
From: Sent: To: Cc: Subject:	Castaneda, Ruben <rcastaneda@santa-ana.org> Tuesday, October 15, 2019 9:33 AM D125R55NorthProject@DDT Higgins, Taig; Galvez, William E; Kekula, Zdenek; Ortiz, Lorrie; Micallef, Michelle; Orellana, Francisco; john8506@sbcglobal.net; jreynolds714@icloud.com Santa Ana Resident - SR-55 (I-5 to SR-91) Project Concern</rcastaneda@santa-ana.org>	jurisdiction in this local area.
Hello SR-55 PDT, The City of Santa Ana r Improvement Project. B concern/comment can b	eccived an email from a resident with concerns related to the SR-55 (1-5 to SR-91) elow please find the resident's contact information and email to the City so that his e added to the project record.	
Resident Information Name: John Reynolds Address: 2026 Deodar S Santa Ana, CA 92705 Email: jreynolds714@is john8506@sbeglobal.ne	street loud.com t	
Email correspondence f	rom resident:	
"Good morning council Street. In our neighborh Deodar Street is used as down. Also if you or a r Wednesday October 161 agencies involved. Than	member Solorio. My name is John Reynolds and I reside in ward 3 at 2026 Deodar ood we have a speeding problem due to the morning and afternoon work commutes. a short cut to access the 55 Freeway. I am requesting speed bumps to slow the vehicles epresentative from your office could attend the SR-55 Improvement Project Meeting on h at 6:000m, to help address this problem and communicate our concerns with the lead k you, John Reynolds."	
Note that as it relates to staff will be analyzing to Should you have any qu	the resident's concern with speeding on Deodar Street, City of Santa Ana Public Works validate the concern and will be reporting the findings back to the resident directly. estions please contact me.	
Thank you,		
Ruben (PWA-Tr 20 Civice Direct: (Castañeda Associate Engineer affic Engineering Center Plaza, M-43 Santa Ana, CA 92701 714) 647-5621 <u>reastaneda@santa-ana.org</u>	
R	2020* SANTA ANA COUNTS	
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	Public Comment PC-19	Response to PC-19
		The commenter's opposition to the project and concerns regarding traffic congestion and air pollution have been documented as part of the public record.
From: Sent: To: Subject: I object to this proje number of vehicles v everyday. With more will help anyone or a	Roxane Kobalka <roxaneirene@yahoo.com> Wednesday, October 16, 2019 10:21 AM D12SR55NorthProject@DOT Increasing lanes on the 55 Freeway ct. The lanes won't help congestion on the 55 Freeway. By the time it is built, the will increase even more. My house backs up to the 55 Freeway. I breathe fumes e lanes, there will be more pollution. Please reconsider this project. I don't think it mything.</roxaneirene@yahoo.com>	As discussed in Section 2.13.3.3, the Build Alternative (Preferred Alternative) would result in temporary air quality impacts during construction related to emissions from construction equipment include CO, NOX, VOCs, directly-emitted particulate matter (PM10 and PM2.5), diesel exhaust particulate matter (PM10 and PM2.5), soot particulate (PM10 and PM2.5), SO2, dust, and odor. However, these temporary impacts will be addressed with implementation of Project Features PF-AQ-1 through PF-AQ-3.
Roxane Irene Koball 13231 Marshall Lane Tustin, CA 92780 Sent from my iPhon		During operation, the Preferred Alternative would improve overall performance, reduce congestion, increase freeway capacity, and improve operational deficiencies at merge and diverge locations within the project limits. Therefore, the Preferred Alternative meets the Clean Air Act requirements and is not a project of air quality concern under 40 CFR 93.123(b)(1). Caltrans has adopted FHWA guidance for evaluating Mobile Source Air Toxics (MSAT) emissions. As discussed in Section 2.13 and the Air Quality Report, implementation of the Preferred Alternative would result in daily MSAT emissions of lesser magnitude than the Baseline (2017) emissions and the No-Build Alternative emissions in both the opening year (2035) and the design year (2055). Overall, the Preferred Alternative would result in lower MSAT emissions and resulting concentrations at receptor locations than the No Build condition. The Preferred Alternative would also result in a slightly greater reduction in MSAT emissions during the Build Alternative condition. The analysis also did not identify and disclose a significant regional or localized air quality impact during construction of the Preferred Alternative.
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From: Laughlin, Theresa <theresa.laughlin@ingrammicro.com> Sent: Wednesday, October 16, 2019 1:45 PM To: D12SR55NorthProject@DOT Cc: Laughlin, Theresa Subject: SR55 expansion project Good morning. I I have been reading about the expansion project for the SR55 and am most interested about the area southbound from the 22. I am hoping to get back into town tonight to attend the meeting at the OC Library but timing may not work out. I live against the 55 south, from the transition of the 22 east to the 55 south.</theresa.laughlin@ingrammicro.com>	The commenter's concern regarding noise impacts has been documented as part of the public record. The proposed project would not require any additional property and no additional noise barriers are being considered in this area southwest of the SR-55 and SR-22 interchange. There were four noise modeled receptors (R-207, R-208, R-216, and R-217) located in the vicinity south of Fairhaven Avenue and west of SR-55, as shown in Figure 2.14-9. None of the receptors identified would experience a substantial noise increase of 12 dBA or more over its corresponding existing noise levels. A detailed discussion on the noise receptors, analysis, and impacts is provided in Chapter 2.14 (Noise). The proposed improvements would not move the existing freeway lanes closer toward the area south of Fairhaven Avenue and west of SR-55.
<text><text><text><text><image/><text></text></text></text></text></text>	Regarding the increase in traffic, the noise impact of the proposed project is addressed in the Noise Study Report (NSR) and the Noise Abatement Decision Report (NADR), that were prepared based on the current May 2011 Traffic Noise Analysis Protocol. Traffic noise impacts are defined when traffic noise approaches or exceed the Noise Abatement Criteria (NAC) or when a substantial noise increase would occur from the exiting circumstances without project to design- year with project.

Public Comment PC-20 (Continued)	Response to PC-20
	Refer to page F-48 for the response to comment PC-20.
Direct +1-714-382-3164 General +1-714-566-1000	
theresa.laughlin@ingrammicro.com	
IngramMicro PartnerPlanning	
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Public Comment PC-22		Response to PC-22
		The commenter's support of the proposed project has been documented as part of the public record.
From: Sent: To:	External, Ghostlightmater@DOT <ghostlightmater@yahoo.com> Thursday, October 17, 2019 12:04 PM D12SR55NorthProject@DOT</ghostlightmater@yahoo.com>	
Subject:	comment regarding the SR55 North Project Public Hearing and Draft Environmental Document (DED)	
Follow Up Flag: Flag Status:	Follow up Flagged	
Name - Jackson Hurst		
Address - 4216 Cornell Crossing, Kennesaw, Georgia 30144		
comment - I really like how you are going to add an auxiliary lane in both the northbound and southbound driectons between the Irvine Boulevard Interchange and the SR-22 Interchange. I also like how you are going to modify the Northbound and Southbound Off - and On-Ramps at Irvine Boulevard, and the Southbound Off - and On-Ramps at E. Katella Avenue, and the Southbound Off-Ramp at Lincoln Avenue.		
sent from ghostlightmater@yahoo.com		
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Public	Comment PC-24	Response to PC-24
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From: Jd Farrell <ergo< td=""> Sent: Sunday, Octobe To: D12SR55Northi Subject: 55 Renovations To whom it may concern, In the forthcoming developments along the 55 free for further renovation and a sound wall. My family continued renovations of the exit. Thank you, John</ergo<>	pidd@gmail.com> er 20, 2019 8:30 PM Project@DOT	The commenter's concern regarding the Chapman Avenue freeway off-ramps has been documented as part of the public record. The proposed project would add one northbound general-purpose lane between I-5 and SR 22 and one southbound general-purpose lane between I-5 and SR 22, provide additional capacity on the southbound SR 55 Katella Avenue off- and on-ramp, and relocate the southbound SR 55 Lincoln Avenue off-ramp, approximately 1,300 feet to the south. However, no physical improvements are proposed for the ramps at Chapman Avenue (Figure 1.3-1) and this area is beyond the limits of the noise study area. Because the area is beyond the limits of the noise study area, no noise barriers would be identified. The Noise Study Report was prepared based on current Caltrans guidelines and procedures in the May 2011 Caltrans Traffic Noise Analysis Protocol and the September 2013 Technical Noise Supplement.

	Public Comment PC-26	Response to PC-26
From: Sent: To: Subject: I have friends who live of wall to this exit in order Thank you Linda Cota-Robles 714-313-2580	Public Comment PC-26 Linda Cota-Robles <lcotarobles@gmail.com> Sunday, October 20, 2019 9:46 PM D12SR55NorthProject@DOT Expansion of 55 freeway on the east side of the 55 freeway exit at Chapman in Orange. Please consider adding a sound to improve the noise in the neighborhoods bordering this exit.</lcotarobles@gmail.com>	Response to PC-26The commenter's request for a soundwall to be considered in the area east of the SR-55 near Chapman Avenue has been documented as part of the public record. The proposed project would add one northbound general-purpose lane between I-5 and SR 22 and one southbound general-purpose lane between I-5 and SR 22, provide additional capacity on the southbound SR 55 Katella Avenue off- and on-ramp, and relocate the southbound SR 55 Lincoln Avenue off- ramp, approximately 1,300 feet to the south. However, no physical improvements are proposed for the ramps at Chapman Avenue (Figure 1.3-1) and this area is beyond the limits of the noise study area. Because the area is beyond the limits of the noise study area, no noise barriers would be identified. The Noise Study Report was prepared based on current Caltrans guidelines and procedures and Caltrans May 2011 Traffic Noise Analysis Protocol and September 2013 Technical Noise Supplement.
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	Public Comment PC-27	Response to PC-27
From: Sent: To: Subject: Sirs: Freeway noise is a issue needs to be a entrance and exit r near to the 55 free We believe a sound noise that is gener interchange. Please on and off ramps. Thank you, Edward and Jennif	<text><text><text><text><text><text></text></text></text></text></text></text>	The commenter's concern regarding freeway noise has been documented as part of the public record. The proposed project would add one northbound general-purpose lane between I-5 and SR 22, provide additional capacity on the southbound SR 55 Katella Avenue off- and on-ramp, and relocate the southbound SR 55 Lincoln Avenue off- ramp, approximately 1,300 feet to the south. However, no physical improvements are proposed for the ramps at Chapman Avenue (Figure 1.3-1) and this area is beyond the limits of the noise study area. Because the area is beyond the limits of the noise study area, no noise barriers would be identified. The Noise Study Report (NSR) was prepared based on current Caltrans guidelines and procedures and Caltrans May 2011 Caltrans Traffic Noise Analysis Protocol and September 2013 Technical Noise Supplement.

Public Comment PC-28	Response to PC-28	
From: Jessica Prechtl <jessicaprechtl@gmail.com> Sent Monday, October 21, 2019 335 AM To: D1258SNorthProject@DOT Subject: Soundwail Hello, Im a homeowner in the Yorba-Prospect neighborhood (331 S Carole Ln, Orange) and I would like to make a comment on the proposed expansion of the 55 freeway. Although I'm happy to hear that the freeway will be expanded to help alleviate congestion, Tm concerned about increased freeway nois. I would like the project to include a Soundwall for the entire stretch of the project, especially north of Palmyra where there is the area's only dog park on Chapman and Yorba. Thanks, Jessica Prechtl S26-225-0301 Jessica Prechtl@gmail.com jessicaprechtl@gmail.com</jessicaprechtl@gmail.com>	The commenter's concern regarding freeway noise has been documented as part of the public record. The proposed project would improve mobility and reduce congestion, increase freeway capacity, and improve traffic operations by adding one northbound general- purpose lane between I-5 and SR 22 and one southbound general- purpose lane between I-5 and SR 22, providing additional capacity on the southbound SR 55 Katella Avenue off- and on-ramp, and relocating the southbound SR 55 Lincoln Avenue off-ramp, approximately 1,300 feet to the south (Figure 1.3-1). As there are no proposed improvements along SR 55 between La Veta and Chapman Avenue, this area is beyond the limits of the noise study and no noise barriers were identified. The noise analysis was based on current Caltrans guidelines and Caltrans May 2011 Traffic Noise Analysis Protocol.	
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Public Comment PC-29	Response to PC-29
From: Sharon Galasso <sgalasso@sbcglobalnet;< td=""> Smit Suesday, October 22, 2019 706 AM To: D1258SShorhFröget@DD Wiger: Sound Wall I am a resident of Orange and an requesting consideration of extending the sound wall along the freeway improvement area where there is no wall. Most important is where the homes are between La Veta through Chapman</sgalasso@sbcglobalnet;<>	The commenter's request for a soundwall to be considered in the residential vicinity between La Veta Avenue and Chapman Avenue has been documented as part of the public record. The Build Alternative includes improvements to SR 55 between I-5 and SR 91, which currently operates at unacceptable levels of service (LOS) during peak periods. Existing traffic volumes, traffic congestion, and travel delay along the SR 55 corridor are anticipated to grow as a result of forecasted increases in population, housing, and employment. Traffic operations along the corridor are impacted due to the following key factors/issues: limited lane capacity on SR 55 during a.m. and p.m. peak periods, inadequate freeway operations resulting from weaving, merging, and diverging within the project limits along the SR 55 corridor. The proposed project would improve mobility and reduce congestion, increase freeway capacity, and improve traffic operations by adding one northbound general-purpose lane between I-5 and SR 22 and one southbound general-purpose lane between I-5 and SR 22, providing additional capacity on the southbound SR 55 Lincoln Avenue off-ramp, approximately 1,300 feet to the south (refer to Figure 1.3-1). As there are no proposed improvements along SR 55 between La Veta and Chapman Avenue, this area is beyond the limits of the noise study and no noise barriers were identified. The noise analysis was based on current Caltrans guidelines and Caltrans May 2011 Traffic Noise Analysis Protocol.
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	Public Comment PC-30	Response to PC-30
From: Sent: To: Subject: Follow Up Flag: Flag Status: I live in the College building a soundwa Thank you!	<text><text><text><text><text><text><text></text></text></text></text></text></text></text>	The commenter's request for consideration of a soundwall for the College Park neighborhood in the City of Orange has been documented as part of the public record. The proposed project would add one northbound general-purpose lane between I-5 and SR 22 and one southbound general-purpose lane between I-5 and SR 22, provide additional capacity on the southbound SR 55 Katella Avenue off- ramp, and relocate the southbound SR 55 Lincoln Avenue off- ramp, approximately 1,300 feet to the south. However, no physical improvements are proposed for the ramps at Chapman Avenue (refer to Figure 1.3-1) and this area is beyond the limits of the noise study area. Because the area is beyond the limits of the noise study area, no noise barriers would be identified. The Noise Study Report was prepared based on current Caltrans guidelines and procedures and Caltrans May 2011 Traffic Noise Analysis Protocol.

	Public Comment PC-31	Response to PC-31
From: Sent: To: Follow Up Flag: Flag Status: My husband and I AGREE that coincide with the OCWR futur way next to former BMX ALL temptations as well as the pro X 55 OVERPASS AND ongoing	SPARROW LaPOINT <sparrowlapoint@gmail.com> fuseday, October 22, 2019 9:35 AM DISESSNorthProject@DOT Pilgged continuation of the currently placed but curtailed Soundwall needs additional building to re demolition AT 334 S. JENNIFER continuing behind former "MACA" and Continuing all the THE WAY to Bike Path Bridge at Chapman would SOLFA "MULTITUDE of sins and oblem to the Heart Team of "HOMELESS INVATION" AND CRIME into and under CHAPMAN CRIME IN our section! Signed Sparrow (Laura) & (S. Jennifer Lane) Hawk (William) LaPoint</sparrowlapoint@gmail.com>	The commenter's concern regarding the safety and homeless issues in the vicinity of SR-55, Jennifer Lane, and Chapman Avenue have been documented as part of the public record and will be shared with the City of Orange. The commenter's suggestion for modifications to a soundwall extension cover areas outside of the Caltrans right-of-way. The proposed project would add one northbound general-purpose lane between 1-5 and SR 22 and one southbound general-purpose lane between 1-5 and SR 22, provide additional capacity on the southbound SR 55 Katella Avenue off- and on-ramp, and relocate the southbound SR 55 Lincoln Avenue off-ramp, approximately 1,300 feet to the south. However, no physical improvements are proposed for the ramps at Chapman Avenue (Figure 1.3-1) and this area and the vicinity the commenter has noted are outside the limits of the noise study area. Because the area is beyond the limits of the noise study area, no new noise barriers or modifications were identified. The Noise Study Report was prepared based on current Caltrans guidelines and procedures in the May 2011 Caltrans Traffic Noise Analysis Protocol and the September 2013 Technical Noise Supplement.
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Public Comment PC-33		Response to PC-33
From: Sent: To: Subject: Follow Up Flag: Flag Status: Hello, I live in Orange and would likk believe modifications need to currently no soundwall at all f A soundwall would greatly imp near the Chapman exit. As stat thoroughfare connecting the I Katella (already being renovat freeway 1/2 a mile before the C the freeway and the YMCA, th This oversight does not seem I freeway directly affecting a cor Improvements to the Chapma and 4th St exit improvements soundproofed. We were uncer investigated for environmenta thus, improving our communi for the Chapman exit soundwa Thank you for involving the cc goal was to "promote and ence community's concerns with ne addressed in the final draft. I a soundwall alternatives would I community hope that you are system which still allows for a Sincerely, Martha Michalak 2524 E Washington Ave, Oran 562-225-4026	<text><text><text><text><text></text></text></text></text></text>	The commenter's request for modifications to the SR-55 northbound off-ramp at Chapman Avenue due to a lack of a soundwall has been documented as part of the public record. The proposed project would add one northbound general-purpose lane between I-5 and SR 22 and one southbound general-purpose lane between I-5 and SR 22, provide additional capacity on the southbound SR 55 Katella Avenue off- ramp, and relocate the southbound SR 55 Lincoln Avenue off- ramp, approximately 1,300 feet to the south. However, no physical improvements are proposed for the ramps at Chapman Avenue (Figure 1.3-1) and this area is beyond the limits of the noise study area. Because the area is beyond the limits of the noise study area, no noise barriers would be identified. The Noise Study Report was prepared based on current Caltrans guidelines and procedures and Caltrans May 2011 Traffic Noise Analysis Protocol and September 2013 Technical Noise Supplement.

Public Comment PC-34		Response to PC-34
		Refer to page F-60 for the response to the SoCalGas, comment PC- 34.
From: Sent: To: Subject: Attachments:	SoCalGasTransmissionUtilityRequest <socalgastransmissionutilityrequest@semprautilities.com> Wednesday, October 30, 2019 11:12 AM D12SR55NorthProject@DOT DCF: 2092-19NC / SR-55 Improvement Project (I-5 to SR-91) 2092-19NC.pdf</socalgastransmissionutilityrequest@semprautilities.com>	
Follow Up Flag: Flag Status:	Follow up Flagged	
Good morning,		
Attached is a notification transmission gas facilities	letter from the Transmission Department of SoCalGas advising that we DO NOT have any within the vicinity of your proposed project.	
Please reference the Doc	ument Control File number (DCF) on all future correspondence in regards to this project.	
Thank you,		
Mike Campisi Pipeline Planning Assistar Gas Transmission Technic	nt Jal Services	
(SoCalGas		
A Sempra Energy utility		
PLEASE VISIT OUR INTERA	CTIVE WEBSITE TO VIEW OUR HIGH PRESSURE DISTRIBUTION AND TRANSMISSION LINES: <u>SOCALGAS</u> - <u>NATURAL GAS PIPELINE MAP</u> .	
TO HELP THE ENVIRONMENT	AND TO EXPEDITE RESPONSES, PLEASE SEND FUTURE PROJECTS AND CORRESPONDING ATTACHMENTS VIA EMAIL: SoCalGasTransmissionUtilityRequest@semprautilities.com	
Please	e allow up to 30 days to receive a response to all future utility requests	
NOTICE: This message is covered by are the exclusive property of Semp to whom this e-mail is addressed. It any attachments and notify the ser unlawful.	y the Electronic Communications Privacy Act, Title 18, United States Code, Sections 2510-2521. This e-mail and any attached files ra Energy and the sender, are deemed privileged and confidential, and are intended solely for the use of the individual(s) or entity fyou are not one of the named recipient(s) or believe that you have received this message in error, please delet this e-mail and nder immediately. Any other use, re-creation, dissemination, forwarding or copying of this e-mail is strictly prohibited and may be	
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Public Comment PC-34 (Continued)		Response to PC-34
Public Comment PC-34 (Contin Example SocialGas Example SocialGas Example SocialGas Example SocialGas Example SocialGas Charles Baker Caltrans - District 12 D12SR55NorthProject@dot.ca.gov Subject: SR-55 Improvement Project (I-5 to SR-91) DCF: 2092-19NC	rransmission Technical Services Department 9400 Oakdale Ave Chatsworth, CA 91311 559314	Response to PC-34 The comment from SoCalGas has been documented as part of the public record. During final design, OCTA and the design team will coordinate with SoCal Gas regarding any potential conflicts with the pipeline system.
Subject: SR-55 Improvement Project (I-5 to SR-91) DCF: 2092-19NC The Transmission Department of SoCalGas does not operate any facilities within your project scope. To assure no conflict with the Distribution Department of SoCalGas may mail facilities within your project scope. To assure no conflict with the Distribution's pipeline system, please e-mail to AtlasRequests/WillServeAnaheim@semprautilities.com Best Regards, Mike Campisi Pipeline Planning Assistant SoCalGas Transmission Technical Services	vithin your proposed intain and operate them at:	
<u>SoCalGasTransmissionUtilityRequest@semprautilities.com</u>		

	Public Comment PC-35	Response to PC-35
		Refer to page F-62 for the response to comments from the Vista Royale Homeowners Association, comment PC-35.
From: Sent: To: Subject: Attachments:	Matt Barrass <mbarrass@forestplywood.com> Wednesday, October 30, 2019 3:47 PM D12SR55NorthProject@DOT SBSR55OR DEIR comments SBSR55OR2.pdf</mbarrass@forestplywood.com>	
Follow Up Flag: Flag Status:	Follow up Flagged	
Please see attached letter Signed, Matthew Barrass		
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NETA ROYALE HOMEOWERS ASSOCIATION Missionally language by Cardinal Property Basegement. ADVE S23 N. Tak Caree Diver Skill Missionally Language by Cardinal Property Basegement. ADVE S23 N. Tak Caree Diver Skill Missionally Language by Cardinal Property Basegement. AdVE S23 N. Tak Caree Diver Skill Decisionally Language by Cardinal Property Basegement. AdVerse Science Diverse Skill Decisionally Language by Cardinal Property Basegement. AdVerse Diverse Diverse Diverse Skill Decisionally Language by Cardinal Property Basegement. AdVerse Diverse	Public Comment PC-35 (Continued)	Response to PC-35
		The commenter's concern regarding freeway noise has been documented as part of the public record. A response letter dated November 15, 2019 from Caltrans (Farid Askaribehbahani and Reza Aurasteh) was e-mailed to address these comments and concerns. In summary the response stated that the Noise Study Report was was adequately prepared in accordance with State of California policies, procedures, and standards. In addition, the existing and future traffic noise levels failed to approach or exceed the Noise Abatement Criteria (NAC). Therefore, no traffic noise impacts were identified and the consideration of noise abatement measures in the form of a noise barrier is not required.

Public Comment PC-35 (Continued)	Response to PC-35
Public Comment PC-35 (Continued) This section left intentionally blank.	Prom: Askaribehbahani, Farid@DOT <farid.askari@dot.ca.gov> Sett: Monday, November 18, 2019 10:27 AM To: Marrass@Torestpiywood.com CG: Baker, Charles.A@DOT <charles.baker@dot.ca.gov>; Walsh, Jason G: Baker, Charles.A@DOT <charles.baker@dot.ca.gov>; Walsh, Jason Subject: [EXTENNAL] 0K7200:SR 55 Project - DEIR -Respond to Vista Royale HOA noise comments Dear Mr. Barrass Attachd, please find our response to your October 30, 2019 letter regarding noise concerns as the result of the future Freeway improvement on the State Route 55 (SR-55), and the Vista Royale HOA. Should you have further question, please feel free to contact me at the No. listed below. Regards, Parid Askari Find Askari Should you have further question, please feel free to contact me at the No. listed below. Regards, Parid Askari Find Askari Koise and Hazardous Waste specialist (657) 328-6534</charles.baker@dot.ca.gov></charles.baker@dot.ca.gov></farid.askari@dot.ca.gov>
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Public Comment PC-35 (Continued)	Response to P	C-35
This section left intentionally blank.		
	STATE OF CALIFORNIA- CALIFORNIA STATE TRANSPORTATION AGENCY	EDMUND G. BROWN Jr., Covernor
	DEPARTMENT OF TRANSPORTATION DISTRICT 12 1750 E. 4 TH STREET, SUITE 100 SANTA ANA, CA 92705 PHONE (657) 328-6138	Make Conservation a California Way of Life.
	November 15 2019	
	Matthew Barass, Board Member Vista Royale Homeowners Association Cardinal Property Management, AAMC 825 N, Park Center Drive, Suite 101 Santa Ana, CA 92705	File: 12-ORA 55 PM10.4/17.9 C/O: EA: 12-0K7200 ID: 1213000149 FWY Improvement Project
	Dear Mr. Barrass	
	1 am in receipt of your October 30, 2019 letter addressed to Environmental Analysis in Caltrans, Orange County, District 12. In your letter you are requesting a sound wall to be constructed to HOA from traffic noise, as part of the State Route 55 freeway in 5/SR 55 interchange and south of SR 55/SR 91 interchange. We revisited the noise study report that was conducted by our co- indicated that the study was performed appropriately and accord procedures adjacent to Santiago Blvd. (ST-52 and ST-53) to me residence closest to the freeway and adjacent to Santiago Blv Additionally, the future predicted noise level was analyzed by mod- at the first row of residents and in their back yard, facing the Santia and the future traffic noise results failed to approach the Noise AI required by Caltrans Traffic Noise Analysis Protocol. As such as and reasonable. Thank you, very much for your letter and sharing your concern wit no further action by Caltrans will be considered regarding traffic no Should you have additional questions, please feel free to contact m	Mr. Charles Baker in the Division of shield the residents of the Vista Royalc provement project between north of 1- nsultant for this project. Our evaluation ing to the State of California policies, term measurements were conducted on asure existing traffic noise levels for the d. on East side of Vista Glen Road. Eling 5 roceptors (R-313 through R-317) ago Blvd. and SR-55. Both. the existing batement Criteria (NAC) of 67 dBA, as ound wall was found not to be feasible h Caltraps. We regret to inform you that oise.
	Sincerely, Rey Amastri- REZ AURASTEH, Ph.D., P.E. Branch Chief Environmental Engineering Branch ec: Charles Baker, Branch Chief, Environmental Analysis Jason Walsh, Jacobs Engineering Jason Lui, LSA Associates, Noise specialist	
	Previole à enfe-sontainable, intégreired and effecient treamy to enhance California a oconomy and irribita	partation systèm S ^{ra} tion

Public Comment PC-35 (Continued)	Response to PC-35
This section left intentionally blank.	

	Public Comment PC-36	Response to PC-36
		Refer to page F-67 for the response to comment PC-36.
From: Sent: To: Subject: Attachments:	Denis Bilodeau <drbilodeau@gmail.com> Wednesday, October 30, 2019 7:48 AM D12SR55NorthProject@DOT SR55 Comment Letter SR55Comment.pdf</drbilodeau@gmail.com>	
Follow Up Flag: Flag Status:	Follow up Flagged	
Please find attached a co	omment letter on the SR55 project.	
Denis Bilodeau 714-749-6386		
	1	

Support Support <td< th=""></td<>

Public Comment PC-37	Response to PC-37
Public Comment PC-33	Response to PC-37 The commenter's concern regarding freeway noise has been documented as part of the public record. The FHWA Traffic Noise Model (TNM) version 2.5 was calibrated based on measured noise levels and information collected in the field to ensure the accuracy of the noise modeling results. One of the two criteria in determining traffic noise impacts based on the guidelines and procedure in the May 2011 Caltrans Traffic Noise Analysis Protocol is a substantial noise increase. A substantial noise increase is based on the noise level difference between the existing without project scenario to the design- year with project scenario. Regarding the FHWA Traffic Noise Model (TNM) version 3.0, this noise model is still considered a draft and the final release have not occurred. TNM 2.5 is still the relevant noise model for traffic noise studies that follow the guidelines and procedures in the May 2011 Caltrans Traffic Noise Analysis Protocol consistent with the September 2013 Technical Noise Supplement.

Public Comment PC-37 (Continued)	Response to PC-37
Public Comment PC-37 (Continued) modeled future noise levels were also compared to the NAC under Activity Categories B, C, D, and E to determine whether a traffic noise impact would occur. The item I question is shown in Ref. My reason for concern is the following: FHWA udated its TIMM in 2016 to Version 3. According to FHWA, TMM 3.0 is a major update to the previous version - TNM 2.5. The TNM 2.5 was released in 2004 and no longer meets modern standards of interface design or software maintenance. TNM 3.0 incorporates new technology and research; and accounts for input received from TNM 2.5 users over the past 12 years. (Publication Number: FHWA.HEP-17-025) http://www.fhwa.dot.aov/environment/noise/traffic_noise_model/Inm_V30/ Furthermore, the Washington State Department of Transportation (WSDOT) Traffic Noise Policies and Procedures require use of the most current Federal Highway Administration (FHWA) Traffic Noise Model (TNM) for traffic noise analysis. TNM modeling Guidance' to promote consistency and facilitate comparisons of modeling results between projects and project alternatives. WSDOT guidance is based on TNM modeling guidelines developed for the Tennessee Department of Transportation and modified to addrese WSDOTS TNM noise modeling experiences for projects in Washington State. (Guidance for Noise Modeling Using FHWA's Traffic Noise Model (TNM) on Projects in Washington State. July 2014. <u>Itte://www.wsdot.wa.gov/environment/air/noise.htm</u> Are similar policies and guidance followed by Cattrans? In any have further comments, but wanted to get this one to you as soon as possible. That you for considering it. Sincerely, kwerea A. Nein, PRD. 2714 N.cowell lane Santa Ana, CA 3270E-1157 Traffic Neil lane Santa Ana, CA 3270E-1157	Response to PC-37 Refer to page F-69 for the response to comment PC-37.
2	

	Public Comment PC-38		Response to PC-38
From: Sent: To: Cc: Subject: Follow Up Flag: Flag Status:	Lawrence A. Klein <larry @taklein.com=""> Friday, November 1, 2019 1:06 PM Uu, Bran Me®DOT Monica Suter; William Galvez Re: Your access to the item is confirmed Follow up Flagged</larry>	9	Comment Response PC-38-1: The commenter's review comments on the project's traffic analysis have been documented as part of the public record. Improvement options along the SR-55 corridor were developed and evaluated during the PSR/PDS phase. At beginning of the PA/ED, those improvement options were further evaluated by the Project Development Team (PDT) based on the criteria including operations performance, right of way, constructability, environmental impacts, and etc. The Build Alternative was determined to provide the most operational benefits after the evaluation.
Hi Brian, I finished my brief revie still time to consider the Page 2.5-35, Table 2.5 Hour: Only 4 out of the incorporate improveme Page 2.5-37, Table 2.5 Hour: Better here. 8 of SI on-ramp) gets worse Page 2.5-38, Table 2.5 locations show worse I improvement. Is the mm Page 2.5-39, Table 2.5 locations show improve With a better design? Page 2.5-40, Table 2.5 Hour and Table 2.1-9b am confused by the fal The AM peak hour SB tables gets worse in th travel conditions. I hope these comments Sincerely, Lawrence A. Klein, Ph, Member TRB Highway Former Member TRB Highway Former Member TRB Highway Former Member TRB Highway Former Generace A. Klein, Ph, Member TRB Highway Former Member TRB Highway Former Member TRB Highway Former Generace A. Klein, Ph, Member TRB Highway Former Generace A. Klein, Ph, Member TRB Highway Former Generace A. Klein, Ph, Member TRB Highway Formation and the start of the start for the start of the start of the start for the start of the start of the start Subject. Re: Your access to to: - (fli-admingBotca.ag C theore Brian,	ew of the document you sent. Here are the rest of my comments I hope there is 5.7a: Opening Year 2035 Northbound SR 55 Freeway Operations AM Peak 17 locations show improvement in operations. Is there a design that will and in additional locations? 5.7d: Opening Year 2035 Intersection Operations AM Peak Hour: 5 of the 31 LOS operations. Can this be remedied? Only 1 location shows an oney proposed for this project being used wisely? 5.8b: Opening Year 2035 Intersection Operations PM Peak Hour: 7 of 31 ements ion LOS. Two locations get worse! Can the performance be improved 5.9a: Opening Year 2035 SR 55 Corridor Peak Hour Travel Time AM Peak 4.00 Supering Year 2035 SR 55 Corridor Peak Hour Travel Time AM Peak 4.00 Pening Year 2035 SR 55 Corridor Peak Hour Travel Time AM Peak 4.00 Pening Year 2035 SR 55 Corridor Peak Hour Travel Time AM Peak 5.9a: Opening Year 2035 SR 55 Corridor Peak Hour Travel Time AM Peak 5.9a: Opening Year 2035 SR 55 Corridor Peak Hour Travel Time AM Peak 6.0 Pening Year 2035 SR 55 Corridor Peak Hour Travel Time AM Peak 5.9a: Opening Year 2035 SR 55 Corridor Peak Hour Travel Time AM Peak 6.0 Pening Year 2035 SR 55 Corridor Peak Hour Travel Time AM Peak 6.0 Pening Year 2035 SR 55 Corridor Peak Hour Travel Time AM Peak 7.0 Pening Year 2035 SR 55 Corridor Peak Hour Travel Time AM Peak 6.0 Pening Year 2035 SR 50 Corridor Peak Hour Travel Time AM Peak 7.0 Pening Year 2035 SR 50 Corridor Peak Hour Travel Time AM Peak 7.0 Pening Year 2035 SR 50 Corridor Peak Hour Travel Time AM Peak 7.0 Pening Year 2035 SR 50 Corridor Peak Hour Travel Time AM Peak 7.0 Pening Year 2035 SR 50 Corridor Peak Hour Travel Time AM Peak 7.0 Pening Year 2035 SR 50 Corridor Peak Hour Travel Time AM Peak 7.0 Pening Year 2035 SR 50 Corridor Peak Hour Travel Time AM Peak 7.0 Pening Year 2035 SR 50 Corridor Peak Hour Travel Time AM Peak 7.0 Pening Year 2035 SR 50 Corridor Peak 7.0 Pening Year 2035 SR 50 Corridor Peak Hour Travel Time AM Peak 7.0 Pening Year 2035 SR 50 Corridor Peak 7.0 Pening Year 20	PC-38-1 PC-38-2 PC-38-3 PC-38-4 PC-38-5	 Comment Response PC-38-2: The segment (14 SR 55 SB: 4th St on-ramp) would accommodate more traffic volumes at this location and therefore result in LOS D under the Build Alternative. Please note LOS D or better is considered as acceptable operations conditions based on Caltrans criteria. and provides adequate capacity for travelers. Comment Response PC-38-3: All five locations would expect worse LOS because they would serve more traffic volumes through those intersections. Please note LOS D or better is considered as acceptable operations conditions based on Caltrans and local jurisdictions' criteria and provides adequate capacity for travelers. In addition, the purpose of the project is to add general purpose lanes to State Route 55 (SR 55) between State Route 22 (SR 22) and the Interstate 5 (1-5), and provide operational improvements at local intersections are not the purpose of this project, the proposed project would not anticipate bringing significant impacts to local intersections. Comment Response PC-38-4: The two locations would expect worse LOS because they would serve more traffic volumes through those intersections. Please note LOS D or better is considered as acceptable operations conditions based on Caltrans and local jurisdictions' criteria and provides adequate capacity for travelers. In addition, the purpose of the project is to add general purpose lanes to State Route 25 (SR 55) between State Route 22 (SR 22) and the Interstate 5 (1-5), and to provide operational improvements at local intersections are not the purpose of this project, the proposed project would not anticipate bringing significant impacts to local intersections. Comment Response PC-38-5: In Chapter 2.5 of the Final IS/EA, tables 2.5-9a and 2.5-9b were revised to correctly reflect the 2035 conditions. As presented in Section 2.5 (Traffic and Transportation), the Build Alternative. The Build Alternative. The Build Alternative. Would reduce northbound and southbound SR 55 travel t

Public Comment PC-38 (Continued)	Response to PC-38
	Refer to page F-70 for response to comment PC-38.
Thank you for the report State Route 55 (SR 55) Improvement Project Between Interstate 5 (I-5) and State Route 91(SR 91).	
I just started to review it and did find an item that concerns me. It is about the noise model used by Caltrans.	
It appears on page 2.14-67 as follows: 2.14.3.2 Permanent Impacts The Noise Study Report (September 2018) was conducted to determine the future traffic noise impacts at receptors along SR 55. Potential long-term noise impacts associated with project operations are solely from traffic noise. Traffic noise was evaluated for the worst-case traffic condition. Using coordinates obtained from the topographic maps, a total of 327 receptor locations associated with existing single- and multifamily residences, pools associated with multifamily residences, churches, playgrounds associated with churches, a classroom associated with a church, hospitals, restaurants, gas stations, a park, a maintenance facility, vacant land, offices, commercial, and retail uses were evaluated in the noise model. Implementation of this Project is not anticipated to result in permanent indirect or direct impacts. <u>Build Alternative</u> Future traffic noise levels for all 327 receptor locations were determined with existing walls using the worst-case traffic operations (prior to speed degradation) or the future (2055) peakhour traffic volumes, whichever is lower. Future traffic volumes on SR 55 and local roadways were obtained from the Final Traffic Volume Report (February 2018). Table B-1 and B-2 in Appendix B of the Noise Study Report summarizes the traffic noise modeling results for the Existing, Future No Build, and Build Alternatives. The modeled future noise levels with the project were compared to the modeled existing noise levels (after calibration) from Traffic Noise Model (TNM) version 2.5 to determine whether a substantial noise increase would occur. The modeled future noise levels were also compared to the NAC under Activity Categories B, C, D, and E to determine whether a traffic noise impact would occur.	
The item I question is shown in Red . My reason for concern is the following: FHWA udated its TNM in 2016 to Version 3. According to FHWA, TNM 3.0 is a major update to the previous version - TNM 2.5. The TNM 2.5 was released in 2004 and no longer meets modern standards of interface design or software maintenance. TNM 3.0 incorporates new technology and research; and accounts for input received from TNM 2.5 users over the past 12 years. (Publication Number: FHWA-HEP-17-025)	
http://www.fhwa.dot.gov/environment/noise/traffic_noise_model/tnm_v30/ Furthermore, the Washington State Department of Transportation (WSDOT) Traffic Noise Policies and Procedures require use of the most current Federal Highway Administration (HHWA) Traffic Noise Model (TNM) for traffic noise analysis. TNM modeling requires numerous inputs and modeling assumptions. Therefore, WSDOOT developed "TNM Modeling Guidance" to promote consistency and facilitate comparisons of modeling results between projects and project alternatives. WSDOT guidance is based on TNM modeling guidelines developed for the Tennessee Department of Transportation and modified to address WSDOT's TNM noise modeling experiences for projects in Washington State. (Guidance for Noise Modeling Using FHWA's Traffic Noise Model (TNM) on Projects in Washington State, July 2014, http://www.wsdot.wa.gov/environment/air/noise.htm Are similar policies and guidance followed by Caltrans?	
I may have further comments, but wanted to get this one to you as soon as possible.	
Thank you for considering it.	
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Public Comment PC-38 (Continued)	Response to PC-38
	Refer to page F-70 for response to comment PC-38.
Sincerely, Lawrence A. Klein, Ph.D. 2714 N. Lowell Lane Santa Ana, CA 92706-1157 714.356.2275 Mobile	
Lawrence A. Klein, Ph.D. 2714 N. Lowell Lane Santa Ana, CA 92706-1157	
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Public Comment PC-39	Response to PC-39
	Comment Response PC-39-1:
From: Calina North Sent: Thursday, December 5, 2019 4:43 PM To: 'Daniel Slater' <danslater(@danslater.com> Subject: RE: Comments about SR55 Project Good afternoon, Mr. Slater, It was nice speaking with you earlier today and thank you for your comments. I will pass your email comments along to Calitrans since they are the agency collecting and responding to comments for the SR-55 (I-5 to SR-91) Improvement Project. Also, in your original email, you asked about the best contact for maintenance on SR-55. That person would be Liz Anderson, Calitrans Maintenance Manager District 12. She can be reached at (714) 685-3221 or via email at <u>itz anderson@dot.ca.gov</u>. If you have any other questions, please don't hesitate to contact me. Calina North Community Relations Offloer Capital Projects Outreadh Orage County Transportation Authority (714) 560-5749 I www.cda.net From: Daniel Slater <danslater@danslater.com> Sent: Thursday, December 5, 2019 2:00 PM To: Calina North Support From: Calina North Support Subject: Comments 3, 2019 2:00 PM To: Calina North Community Relations 2, 2019 2:00 PM To: Calina North Comments 7, 2019 2:00 PM To: Calina North Comments 7, 2019 2:00 PM To: Calina North Comments about SR55 Project </danslater@danslater.com></danslater(@danslater.com>	 The commenter's concern regarding the landscaping improvements of the project has been documented as part of the public record. As noted in Chapter 2.6, a landscape architect will prepare a Landscape Plan during final design to address landscape treatment within the State right-of-way along the project segment of SR 55. The Landscape Plan will be submitted to the Caltrans District Landscape Architect for review and approval. During construction, the construction contractor will implement the provisions of the approved Landscape Plan as shown in the project specification. The Landscape Plan may include some of the following: Identifying/defining the minimum standards for providing landscaping: available land, no conflicts with traffic operations and safety, safe access for maintenance and trash removal, and access to irrigation and water if needed Identifying landscaping and hardscape concepts and materials to maintain or improve the visual character of the existing landscaping Incorporating applicable procedures and requirements in the Caltrans Highway Design Manual
Dear Calina, Thanks so much for the opportunity to still participate in comments for this project. 1 apologize for	 Using drought-resistant plants and xeric (adapted to arid conditions) landscaping techniques
being late. My comments are as follows: SR55 is a vital artery that literally cuts through the middle of Orange from north to south. It's efficiency as well as appearance are critical to the overall impression created of the city before one exits the freeway. My comments therefore are infandly in the nertherite rates?	• Providing low-maintenance, erosion-control groundcover species and low-height shrubs in the palette to preserve existing views and prevent erosion
 rreeway. Wy comments therefore are primarily in the aesthetics area: Please ensure that enough funds are available so that the landscaping improvements done upon completion of the project are maintained until the plants are well established (i.e. that dead plants are replaced) and that weeds and trash are regularly abated. Since the last major improvement project on SR55 through Orange, maintenance has been horrible, plants and trees have died and trash is a continuing problem. 	 Providing landscaping as soon as possible in the construction process to minimize bare soil and potential erosion effects Ensuring that the landscape plant palette conforms with adopted Caltrans standard specifications
1.	Replacing landscaping to its original or better condition Replacing landscaping to its original or better condition after completion of use.

	Comment Response PC-39-2:
 Assuming that the landscaping is drought tolerant, which is also my preference, can more color be incorporated, such as orange lantana or orange bougainvillea? This gives one the knowledge that theyre in Orange. PC-39-1 PC-39-1 PC-39-2 Sundor and cover (like ice plant that requires a lot of irrigation) where new landscaping is required in this project. an some kind of sign, similar to what's on the 91 FWY announcing the arrival into Corons, be incorporated on overpasses such as the LaYeta bridge going north and the Meats bridge going such? If not in your puriew, what is the process to proceed with something like that? Aside from the above, Ilike the overall structural improvements proposed to increase traffic efficiency and hope the project can commence sooner than later. Again, thanks for the opportunity to comment. Please acknowledge you received this. Respectfully, Dan Slater Office Phone: 714-997-0050 Cay 27. 2499-0050 Cay 27. 24. 249. 20051 Cay 27. 24. 249. 20051 Cay 27. 24. 249. 20052 Cay 27. 24. 249. 20052 Cay 27. 24. 24. 20052 Cay 28. 24. 24. 20052	Signage design and placement will need to be reviewed and determined by Caltrans. Confirm with Caltrans Traffic Operations, District Sign Coordinator and Caltrans Maintenance regarding signage.
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F.11 Public Comments by Email & Common Response

Each of these comments in this section comprised only of a request for the Draft IS/EA. These requests were addressed with the **Common Response 4** (**CR-4**): *Thank you for your request to receive a copy of the document. A link to an electronic copy of the document has been provided to you by Caltrans.*

	Public Comment PC-1	Response to PC-1
		Common Response 4 (CR-4):
From: Sent: To: Subject:	Gary Gettman <get2fishin@aol.com> Monday, September 30, 2019 10:03 AM D12SR55NorthProject@DOT Request for Draft Environmental Document</get2fishin@aol.com>	The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.
Please email me the Dra	aft Environmental Document for the SR-55 (I-5 to SR-91) Project	
Gary Gettman		
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	Public Comment PC-2	Response to PC-2
		Common Response 4 (CR-4):
From: Sent: To: Subject:	Karen Chapman <karen.chapman@tylin.com> Tuesday, October 1, 2019 6:11 PM D12SR55NorthProject@DOT Request for environmental document</karen.chapman@tylin.com>	The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.
Hello,		
Would it be possible to the SR-55 Improvement	o obtain an electronic version of the environmental document and supporting technical studies for nt Project from 1.5 to $\mathrm{SR}{-}91?$	
Thank you in advance	for your help.	
Karen Chapman, PE Transportation Services I Transportation Services I Vice CA 92618 949.338.4950 main karen.chapman@tylin Visit us online at www Twitter Facebook L	Vanager TIONAL .com .tvlin.com .inkedIn Instagram	
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	Public Comment PC-3	Response to PC-3
		Common Response 4 (CR-4):
From:	F.S. <evoliye@gmail.com></evoliye@gmail.com>	The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans
Sent: To: Subject:	Thursday, October 3, 2019 7:06 AM D12SR55NorthProject@DOT SR-55 (I-5 to SR-91)	
Please send DED.		
Sent from my iPhone		
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	Public Comment PC-4	Response to PC-4
		Common Response 4 (CR-4):
		The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.
From: Sent: To: Subject:	Karen DiCarlo <karencdicarlo@icloud.com> Saturday, October 5, 2019 9:19 AM D12SR55NorthProject@DOT SR55 DED</karencdicarlo@icloud.com>	
I'd like to view the	DED for the SR55 project. How can I get access to it?	
Karen DiCarlo		
Sent from my iPho	ne	
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	Public Comment PC-5	Response to PC-5
		Common Response 4 (CR-4):
From: Sent: To: Subject:	rexnchery@earthlink.net Saturday, October 5, 2019 8:12 PM D12SR55NorthProject@DOT The Draft Environmental Document (DED)	The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.
To whom it may conce	ern,	
We will be unable to a copy of the Draft Envi	attend the public meetings and with this email would like to request an electronic ronmental Document (DED).	
Thank you, Cheryl Hyon 13612 Fairmont Way Tustin, CA 92780		
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Public Comme	ent PC-6	Response to PC-6
		Common Response 4 (CR-4):
From: Francis Hunter <fhunter585@aa Sent: Friday, October 11, 2019 3:01 Pl To: D12SR55NorthProject@DOT</fhunter585@aa 	ol.com> M	The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy o the document has been provided to the commenter by Caltrans.
Follow Up Flag: Follow up Flag Status: Flagged		
I would appreciate it if you would send me a copy of the SR55project. My email is: <u>fhunter585@aol.com</u> a 13682 Marshall Lane, Tustin, CA 92780-1824. Thank	the Draft Environmental Documents for nd mailing address is: Francis Hunter, you.	
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	Public Comment PC-8	Response to PC-8
		Common Response 4 (CR-4):
		The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.
From: Sent: To: Subject:	Jeff Gomes <jgomes@mmmagic.com> Friday, October 11, 2019 11:01 AM D12SR55NorthProject@DOT Draft Environmental Document</jgomes@mmmagic.com>	
Hello:		
Please send the Draft	Environmental Document in electronic form.	
Thank you.		
~ Jeff		
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	Public Comment PC-9	Response to PC-9
		Common Response 4 (CR-4):
		The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of
From: Sent: To: Subject:	David Schilpp <dschilpp2@earthlink.net> Friday, October 11, 2019 3:08 PM D12SR55NorthProject@DOT SR55 NorthProject information</dschilpp2@earthlink.net>	the document has been provided to the commenter by Caltrans.
Follow Up Flag: Flag Status:	Follow up Flagged	
I have been told by Calin plans. As there is only ha materials as soon as pos	a North of OCTA that I need to make a request to you to see the materials regarding the SR55 aff a month from when the filer was distributed until the deadline I would like access to the sible.	
Thanks David Schilpp		
From her email: During the environmental Draft Environmental Doc make the documents ave D12SR55NorthProject@ via email or mail.	I phase, technical studies are prepared. The results of these studies are now available via the ument (DED) for public review and comment. Due to ADA compliant issues, Caltrans is unable to allable online. However, you can request to receive them electronically by emailing dot.ca.gov. As you know, the last day to provide comments is Oct. 30 and you can submit them by the studies of the stu	
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	Public Comment PC-10	Response to PC-10
		Common Response 4 (CR-4):
From: Sent: To: Subject:	Lauren Murphy <aleksandernicholas@yahoo.com> Monday, October 14, 2019 2:59 PM D12SR55NorthProject@DOT Draft Environment Document</aleksandernicholas@yahoo.com>	The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.
I would like to request a	copy of the Draft Environmental Document for the SR 55 Improvement Project (5 to 9).	
Thank you.		
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	Public Comment PC-11	Response to PC-11
		Common Response 4 (CR-4):
From: Sent: To:	Sean Noonan <smartgrowthsean@gmail.com> Monday, October 14, 2019 12:05 PM Liu, Brian M@DOT</smartgrowthsean@gmail.com>	The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.
Subject:	SR-55 Widening DED	
Hi Brian - can you pleas they are at a different l Also, can you confirm t Thanks, Sean Michael Noonan, A (714) 470-8724 / <u>SmartG</u>	se send over a link to access the DED for this project? Please include links to the NSR and NADR if location. he public meeting will be open house format and that there will be no formal presentation? ICP rowthSean@gmail.com	
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	Public Comment PC-12	Response to PC-12
		Common Response 4 (CR-4):
From: Sent: To: Cc:	Sean Noonan <smartgrowthsean@gmail.com> Monday, October 14, 2019 12:16 PM D125R55NorthProject@DOT Liu, Brian M@DOT</smartgrowthsean@gmail.com>	The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.
Subject:	SR-55 Widening DED	
Hi - please send me a a second to this email	link to download the DED for this project. I originally sent an email directly to Brian but am sending address just in case. Thanks.	
 Sean Michael Noonan, (714) 470-8724 / Smarth	AICP GrowthSean@smail.com	
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	Public Comment PC-15	Response to PC-15
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		Common Response 4 (CR-4):
		The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.
From: Sent: To: Subject:	M Lebeau <mike.lebeau@att.net> Tuesday, October 15, 2019 10:18 AM D12SR55NorthProject@DOT Please provide me</mike.lebeau@att.net>	
With access to an o	electronic copy of the entire SR-55 Proposal.	
Thank you.		
Mike		
Sent from my iPho	ne	

	Public Comment PC-16	Response to PC-16
		Common Response 4 (CR-4):
From: Sent: To: Subject:	Sean Noonan <smartgrowthsean@gmail.com> Tuesday, October 15, 2019 1:23 PM Liu, Brian M@DOT Re: SR-55 Widening DED</smartgrowthsean@gmail.com>	The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.
Hi Brian - can you plea	se provide the 2018 NSR and NADR that were prepared for this project?	
Thanks		
On Mon, Oct 14, 2019	at 12:49 PM Liu, Brian M@DOT < brian.lui@dot.ca.gov> wrote:	
Good afternoon Sean		
Just sent an ftp link to presentation will be p	o <u>smartgrowthsean@gmail.com</u> . The public meeting will be an open house format and no formal provided.	
Brian Liu		
Caltrans District 12, E	nvironmental Analysis - Specialist Branch	
Associate Environme	ntal Planner	
1750 East 4 th Street		
Santa Ana, CA 92705		
(657) 328-6135		
From: Sean Noonan < Sent: Monday, Octob To: Liu, Brian M@DO Subject: SR-55 Wider	smartgrowthsean@gmail.com> er 14, 2019 12:05 PM T < <u>brian.lui@dot.ca.gov</u> > ing DED	
Hi Brian - can you ple they are at a differen	ase send over a link to access the DED for this project? Please include links to the NSR and NADR if location.	
Also, can you confirm	the public meeting will be open house format and that there will be no formal presentation?	
Thanks, 		
Sean Michael Noonan, (714) 470-8724 / <u>Smart</u>	AICP GrowthSean@gmail.com	
	1	

	Public Comment PC-18	Response to PC-18
		Common Response 4 (CR-4):
From: Sent: To: Subject:	Francine Scinto <francine.scinto@gmail.com> Wednesday, October 16, 2019 8:54 AM D12SR55NorthProject@DOT 55 Widening. Livine BLVD to the 91</francine.scinto@gmail.com>	The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.
Follow Up Flag: Flag Status:	Follow up Flagged	
Please email a pdf of	or link to the EIR for the widening of the 55 from Irvine Boulevard to the 91.	
Sent from my iPad		
	1	

	Public Comment PC-21	Response to PC-21	
		Common Response 4 (CR-4):	
		The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of	
From: Sent: To: Subject:	Mary Flores <mamaflores1958@gmail.com> Thursday, October 17, 2019 2:45 PM D12SR55NorthProject@DOT 55 project</mamaflores1958@gmail.com>	the document has been provided to the commenter by Caltrans.	
Follow Up Flag: Flag Status:	Follow up Flagged		
Can you please email	I the documents for my family to review?		
Thank you Sent from my iPhone	2		
	1,		

	Public Comment PC-23	Response to PC-23
		Common Response 4 (CR-4):
From: Sent: To: Subject:	Alma Karic <akaric@crdattorneys.com> Thursday, October 17, 2019 12:45 PM D12SR55NorthProject@DOT Request for the electronic version of the document</akaric@crdattorneys.com>	The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of the document has been provided to the commenter by Caltrans.
Follow Up Flag: Flag Status:	Follow up Flagged	
STATE ROUTE 55 IMPROV Notice of Availability of a In addition, an electronic Callanan Rogers Dzida, Alma Karic Office Administrator Priore: 213.599.768 Fax: 21	WENDED FOR PROJECT (Between I-5 and SR-91) Notice of Intent to Adopt a Negative Declaration in Initial Study/Environmental Assessment version of the documents can be requested at D12SR55NorthProject@dot.ca.gov. Image: Data and the intended of the sole use of the Individual or entity to whom it is addressed and may can fide any action in reliance on the contents of this transmission in error, please notify Calianan, Rogers at the telephone number listed above, or by reply to this transmission. Thank you.	
	1)	

From: Joanne Ady <joanne0079@gmail.com> Sent: Sunday, October 20, 2019 8:24 PM To: D125R55NorthProject@DOT Subject: Details requested Follow Up Flag: Follow up Flag Status: Flagged I would like to request a (free) copy of the Draft Environmental Document. I understand that you will email me a copy if I request it. Thank you.</joanne0079@gmail.com>	
From: Joanne Ady <joanne0079@gmail.com> Sent: Sunday, October 20, 2019 8:24 PM To: D12SR55NorthProject@DOT Subject: Details requested Follow Up Flag: Follow up Flag Status: Follow up Flag Status: Follow up Thank you. Thank you.</joanne0079@gmail.com>	
Follow Up Flag: Follow up Flag Status: Flagged I would like to request a (free) copy of the Draft Environmental Document. I understand that you will email me a copy if I request i. Thank you.	document has been an electronic copy of er by Caltrans.
I would like to request a (free) copy of the Draft Environmental Document. I understand that you will email me a copy if I request it. Thank you.	
Thank you.	

	Public Comment PC-32	Response to PC-32
		Common Response 4 (CR-4):
		The commenter's request to receive a copy of the document has been documented as part of the public record. A link to an electronic copy of
From: Sent: To: Subject:	Lawrence A. Klein <larry@laklein.com> Friday, October 25, 2019 11:16 AM D12SR55NorthProject@DOT Draft Environmental Document (DED) For Improvements on SR-55 between I-5 and SR-91</larry@laklein.com>	the document has been provided to the commenter by Caltrans.
Follow Up Flag: Flag Status:	Follow up Flagged	
I would like to reques Improvements on SR	st an electronic copy of the Draft Environmental Document (DED) For -55 between I-5 and SR-91 for review.	
Please send it to this	email address: lawrenceaklein@gmailcom	
Thank you.		
Lawrence A. Klein, Ph.D. 2714 N. Lowell Lane Santa Ana, CA 92706-1157		
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US. Department of Transportation Federal Highway Administration

California Division

February 25, 2020

650 Capitol Mall, Suite 4-100 Sacramento, CA 95814 (916) 498-5001 (916) 498-5008 (fax)

> In Reply Refer To: HDA-CA

Ryan Chamberlain, District Director California Department of Transportation District 12 1750 E., 4th St., Suite 100 Santa Ana, CA 92705

Attention: Arman Behtash

Dear Mr. Chamberlain:

SUBJECT: Project Level Conformity Determination for the State Route 55 Improvement Project (FTIP ID ORA131301)

On January 20, 2020, the California Department of Transportation (Caltrans) submitted to the Federal Highway Administration (FHWA) a complete request for a project level conformity determination for the State Route 55 Improvement Project. The project is in an area that is designated Non-Attainment or Maintenance for Nitrogen Dioxide (NO₂), Carbon Monoxide (CO), Ozone and Particulate Matter (PM₁₀, PM_{2.5}).

The project level conformity analysis submitted by Caltrans indicates that the project-level transportation conformity requirements of 40 CFR Part 93 have been met. The project is included in the Southern California Association of Governments' (SCAG) current Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP), as amended. The design concept and scope of the preferred alternative have not changed significantly from those assumed in the regional emissions analysis.

As required by 40 CFR 93.116 and 93.123, the localized PM_{2.5} and PM₁₀ analyses are included in the documentation. The analyses demonstrate that the project will not create any new violations of the standards or increase the severity or number of existing violations.

Based on the information provided, FHWA finds that the State Route 55 Improvement Project conforms with the State Implementation Plan (SIP) in accordance with 40 CFR Part 93.

If you have any questions pertaining to this conformity finding, please contact Joseph Vaughn at (916) 498-5346 or by email at Joseph.Vaughn@dot.gov.

Sincerely,

Plenier Tashia J. Clemons

Director, Planning and Environment

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