# CEQA INITIAL STUDY MITIGATED NEGATIVE DECLARATION

# PETERS CANYON BIKEWAY EXTENSION IP 18-045

**Prepared** for:



County of Orange OC Public Works 601 North Ross Street Santa Ana, CA 92701-4048

**Prepared by:** 

Environmental Science Associates 2121 Alton Parkway, Suite 100 Irvine, CA 92606

March 2021

# **Table of Contents**

Chapter 1:	Introduction	1
1.1	Project Title	1
1.2	Lead Agency Name   Address	1
1.3	Lead Agency Contact Person   Telephone Number   Email	1
1.4	Project Location	1
1.5	Project Sponsor's Name   Address	1
1.6	General Plan   Specific Plan Designation(s)	1
1.7	Zoning District(s)	. 2
1.8	Description of Project	. 2
1.9	Surrounding Land Uses and Setting	. 2
1.10	Other Public Agencies Whose Approval is Required	. 2
1.11	California Native American Consultation	. 3
Chapter 2:	Environmental Determination	• 4
Chapter 3:	Project Description	5
3.1	Overview	. 5
3.2	Environmental Setting	. 5
3.3	Project Components.	. 5
3.4	Construction	.12
Chapter 4:	Environmental Evaluation	15
4.1	Analysis Methodology	.15
4.2	Environmental Factors Potentially Affected	.15
4.3	Thresholds of Significance	.16
4.4	Environmental Baseline	.16
4.5	Aesthetics	.17
4.6	Agriculture and Forestry Resources	.10
4.7	Air Quality	.21
4.8	Biological Resources	30
4.9	Cultural Resources	30
4 10	Energy	12
4.10	Geology and Soils	4 <u>-</u> 11
4 12	Greenhouse Gas Emissions	77 /0
4.12	Hazards and Hazardous Materials	51
4.10	Hydrology and Water Quality	54
4.14	Land Use and Planning	58
4.16	Mineral Resources	50
4.10	Noise	59 60
4.17	Population and Housing	60
4.10	Public Services	70
4.19	Recreation	70
4.20	Transportation	72 72
4.21	Tribal Cultural Resources	73
4.22	Itilities and Service Systems	70
4+40 191	Wildfire	/9 81
4·44 1 95	Mandatory Findings of Significance	80 80
4.40 Chapton -	Summary of Mitigatian Maguras and Project Design Eastures	03 0-
Chapter 5:	Summary of Mitigation Measures and Project Design Features	05
Chapter 6:	Reterences	91

#### List of Figures

Figure 1:	Regional Location Map	6
Figure 2:	Project Site Overview	7
Figure 3:	Proposed Alignment	9
Figure 4:	Existing and Proposed Typical Sections1	0
Figure 5:	Right-of-Way Impacts/Retaining Wall Impacts1	3
Figure 6:	Proposed Staging Areas1	4
-		

#### List of Tables

Table 1:	Public Agency and Other Approvals	3
Table 2:	Construction Phasing	12
Table 3:	Environmental Factors Potentially Affected	15
Table 4:	Estimated Construction Schedule	24
Table 5:	Maximum Regional Construction Emissions – without Mitigation	
	(pounds per day)	24
Table 6:	Maximum Localized Construction Emissions – without Mitigation	
	(pounds per day)	27
Table 7:	Project Impacts to Vegetation Communities and Land Cover Types in or	
	Adjacent to Peters Canyon Regional Park	35
Table 8:	Project Impacts to Vegetation Communities and Land Cover Types Adjacent	
	to Vidorra Residential Area (Away from Regional Park)	35
Table 9:	Exterior Noise Standards	61
Table 10:	Interior Noise Standards	62
Table 11:	Exterior Noise Standards	63
Table 12:	Construction Equipment	64
Table 13:	Construction Equipment Noise Reference Levels and Usage Factors	65
Table 14:	Construction Noise in Different Phases	67
Table 15:	Summary of Mitigation Measures and Project Design Features	85

#### Appendices

- Appendix A Air Quality, Energy, and Greenhouse Gas Emissions Calculations
- Appendix B Natural Environment Study
- Appendix C Archaeological Survey Report
- Appendix D Preliminary Foundation Report Appendix E Paleontological Resources Assessment

## **Chapter 1: Introduction**

The purpose of this Initial Study is to evaluate the potentially significant environmental impacts associated with implementing the Proposed Project. The Initial Study is organized into the following chapters:

- Chapter 1: Introduction
- Chapter 2: Environmental Determination
- Chapter 3: Project Description
- Chapter 4: Environmental Evaluation
- Chapter 5: Summary of Mitigation Measures and Project Design Features
- Chapter 6: References

#### 1.1 Project Title

Peters Canyon Bikeway Extension Project

#### **1.2** Lead Agency Name | Address

County of Orange OC Public Works/Infrastructure Programs 601 North Ross Street Santa Ana, CA 92703

#### **1.3 Lead Agency Contact Person | Telephone Number | Email**

May Duong Project Manager Telephone: 714-667-9693 Email: may.duong@ocpw.ocgov.com

#### **1.4 Project Location**

The Project is located on Jamboree Road between Canyon View Ave to the north, and extends south to Pioneer Road and continues along Pioneer Road until Pioneer Way to the south. The northern portion of the Project is located in the City of Orange, and the southern portion is located in the City of Tustin. Refer to the Project Description below for further information.

#### **1.5 Project Sponsor's Name | Address**

Orange County Public Works 601 N. Ross St Santa Ana, CA 92703

#### **1.6** General Plan | Specific Plan Designation(s)

The northern portion of the Project Site, which is located within the City of Orange is designated OS-P (Open Space Park). The southern portion of the Project Site, located in the City of Tustin, is designated PCR (Planned Community Residential) (City of Orange 2015; City of Tustin 2018a).

#### **1.7** Zoning District(s)

The northern portion of the Project Site is zoned by the City of Orange as R-O (Residential Open Space). The southern portion of the Project Site, located in the City of Tustin, is zoned PC RES (Planned Community Residential) (City of Orange 2020; City of Tustin 2020b).

#### **1.8** Description of Project

The Project would construct a new shared-use (Class I) path and buffered (striped) Class II bike lane that would extend the Peters Canyon Bikeway from the intersections of Jamboree Road with Canyon View Avenue and Pioneer Road with Pioneer Way, in the cities of Orange and Tustin. The Project would also include sidewalk improvements, the relocation of utilities, construction of a retaining wall, signage and striping improvements, and landscaping improvements. Refer to Chapter 3 for a comprehensive description of the Proposed Project.

#### **1.9** Surrounding Land Uses and Setting

The northern portion of the Project Site is surrounded to the east and west by Peters Canyon Regional Park and open space, with Foothill/Eastern Transportation Corridor Agency, toll road State Route 261 (SR-261), located east of and parallel to Jamboree Road. The southern portion of the Project Site is surrounded by single-family and multi-family residential development and neighborhood parks, including Pioneer Road Park and Cedar Grove Park. Creator's Corner Pre-School is located to the southeast of the project approximately 600 feet south of the intersection of Jamboree Road and Pioneer Road. Peters Canyon Elementary School is located adjacent to and west of the Project Site, at the intersection of Pioneer Road and Peters Canyon Road. Additionally, Pioneer Middle School, Orange County Fire Authority Station 43, and a Kingdom Hall of Jehovah's Witnesses church are located at the terminus of the Project Site, at the intersection of Pioneer Road and Pioneer Road and Pioneer Way.

#### 1.10 Other Public Agencies Whose Approval is Required

**Table 1** provides a list of required and anticipated public agency approvals that are associated with the Project.

Body	Action		
City of Tustin	Encroachment Permit for the portions constructed by OCPW within the City's right-of- way		
City of Orange	Encroachment Permit for the portions constructed by OCPW within the City's right-of- way		
Vidorra Homeowners Association <sup>1</sup>	Right-of-way acquisition and/or bikeway easements		
Santiago Aqueduct Commission/ Metropolitan Water District of Southern California	Right-of-way acquisition and/or bikeway easements		
OC Parks	Right-of-way acquisition and/or bikeway easements		
<sup>1</sup> Vidorra HOA is not a public agency but is included here as a necessary approval.			

Table 1:	<b>Public Agency and Other Approval</b>	S
I upic II	i upite ingeney und other inppi ovur	

#### 1.11 California Native American Consultation

On October 1, 2020, Orange County Department of Public Works (OCPW) sent project notification letters to the following Native American tribes, which had previously submitted general consultation request letters pursuant to 21080.3.1(d) of the Public Resources Code:

- San Gabriel Band of Mission Indians
- Gabrieleño Band of Mission Indians Kizh Nation
- Juaneño Band of Mission Indians
- Soboba Band of Luiseño Indians

Each recipient was provided a brief description of the project and its location, the lead agency contact information, and a notification that the tribe has 30 days to request consultation. The 30-day response period concluded on October 31, 2020.

No responses were received from any of the contacted California Native American tribes.

### **Chapter 2: Environmental Determination**

Based on the analysis conducted in this Initial Study, the County of Orange, OC Public Works, Development Services/Planning, as the Lead Agency, has made the following determination:

#### **Environmental Determination**

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made or agreed to by the project proponent. A <b>MITIGATED NEGATIVE DECLARATION</b> will be prepared.	
I find that the proposed project MAY have a significant effect on the environment, and an <b>ENVIRONMENTAL IMPACT REPORT</b> is required.	
I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An <b>ENVIRONMENTAL IMPACT REPORT</b> is required, but it must analyze only the effects that remain to be addressed.	
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier <b>EIR</b> or <b>NEGATIVE DECLARATION</b> pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier <b>EIR</b> or <b>NEGATIVE DECLARATION</b> , including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	
I find that the proposed project has previously been analyzed as part of an earlier CEQA document (which either mitigated the project or adopted impacts pursuant to findings) adopted/certified pursuant to the State CEQA Guidelines and the County's adopted Local CEQA Guidelines. The proposed project is a component of the whole action analyzed in the previously adopted/certified CEQA document.	
I find that the proposed project has previously been analyzed as part of an earlier CEQA document (which either mitigated the project or adopted impacts pursuant to findings) adopted/certified pursuant to State and County CEQA Guidelines. Minor additions and/or clarifications are needed to make the previous documentation adequate to cover the project which are documented in this addendum to the earlier CEQA document (CEQA §15164).	
I find that the proposed project Has previously been analyzed as part of an earlier CEQA document (which either mitigated the project or adopted impacts pursuant to findings) adopted/certified pursuant to State and County CEQA Guidelines. However, there is important new information and/or substantial changes have occurred requiring the preparation of an additional CEQA document (ND or EIR) pursuant to CEQA Guidelines Sections 15162 through 15163.	

Signature

3/25/2021 Date

Cirdy Salazar

Printed Name

## **Chapter 3: Project Description**

#### 3.1 Overview

Orange County Public Works (OCPW), as the lead agency under the California Environmental Quality Act (CEQA), has identified the need for the Peters Canyon Bikeway Extension Project (Proposed Project or Project). The Project would construct a new shared-use Class I path and buffered (striped) Class II lane that would extend the Peters Canyon Bikeway Trail to the existing bikeway at the intersections of Jamboree Road with Canyon View Avenue and Pioneer Road with Pioneer Way in the cities of Orange and Tustin. The Proposed Project closes a critical gap in the County's existing bikeway network, which will enhance bicyclists' safety and comfort. The Project would provide a continuous bike and pedestrian route that connects to the Cedar Grove Park, Pioneer Road Park, Peters Canyon Regional Park, Santiago Canyon College, Peters Canyon Elementary School, and neighborhoods along Jamboree Road and Pioneer Road.

#### 3.2 Environmental Setting

The Project Site extends along Jamboree Road and Pioneer Road, with the northern extent located at the intersection of Jamboree Road and Canyon View Avenue (located in the City of Orange) to the southern extent at the intersection of Pioneer Road and Pioneer Way (located in the City of Tustin), as shown in **Figure 1 - Regional Location** and **Figure 2 - Project Site Location**.

Jamboree Road is a 120-foot-wide major arterial roadway in the cities of Tustin and Orange with a posted speed limit of 55 miles per hour. Within the Project limits, Jamboree Road has two lanes of traffic in each direction, with a 30-foot-wide landscaped median, a 7-foot-wide Class II bike lane on both sides, and a 6-foot-wide sidewalk on the west side. The roadway grade varies from approximately 3.5 percent to 6 percent. There are several water meters, high voltage electrical cabinets, pull boxes, valve boxes, irrigation systems, concrete V-ditches, fire hydrants, catch basins, and mature trees along the west side of Jamboree Road. In addition, an approximately 300-foot-long retaining wall is located along the west side of Jamboree Road near the Santiago Aqueduct Commission/Metropolitan Water District of Southern California facilities (near the intersection of Jamboree Road and Canyon View Avenue).

Pioneer Road is a 68-foot-wide divided collector road in the City of Tustin with a posted speed limit varying from 25 to 40 miles per hour. Pioneer Road has one lane of traffic in each direction, and a two-way left turn. In addition, Pioneer Road has a 7-foot-wide sidewalk and an 8-foot-wide Class II bike lane on both sides. Pioneer Road's roadway grade is approximately 4 percent.

#### 3.3 **Project Components**

The Proposed Project consists of a total of approximately 2.7 miles of a Class I shared-use path and buffered (striped) Class II bike lane. The proposed off-street paved Class I shared-use path would begin on the west side of Jamboree Road from Canyon View Avenue to Pioneer Road, then a buffered (striped) Class II bike lane would continue along both sides of Pioneer Road from Jamboree Road to Pioneer Way, as shown in **Figure 3 – Proposed Alignment** and **Figure 4 – Existing and Proposed Typical Sections**.



SOURCE: Mapbox Streets, 2020.

ESA

Peters Canyon Bikeway Extension Project

Figure 1 Regional Location Map



SOURCE: OCPW, 2020

Peters Canyon Bikeway ExtensionProject

Figure 2 Project Site Overview

ESA

This page intentionally left blank



SOURCE: County of Orange, 2020

Peters Canyon Bikeway ExtensionProject

Figure 3 Proposed Alignment

#### **Existing Conditions**



Jamboree Road, looking north

#### **Proposed Conditions**



The proposed bike path, lodge pole fencing, and sidewalk at the west side of Jamboree Road'

**Existing Conditions** 



**Pioneer Road** 

#### **Proposed Conditions**



The proposed restriping of the bike path on both sides of Pioneer Road

SOURCE: County of Orange, 2020

Peters Canyon Bikeway ExtensionProject



#### Jamboree Road Improvements

Implementation of the Proposed Project would include demolition of approximately 1.2 miles of the existing sidewalk along the west side of Jamboree Road between Canyon View Avenue and Pioneer Road, and the relocation of utilities consisting of water meters, high voltage electrical cabinets, pull boxes, valve boxes, irrigation systems, concrete V-ditches, fire hydrants, and catch basins along the west side of Jamboree Road. It is anticipated that all the aforementioned conflicting utilities facilities would be relocated within the existing parkway space. Approximately 40 mature, non-native, ornamental trees will be removed. In its place, a 1.2-mile-long 12-foot-wide Class I paved shared-use path constructed along the west side of Jamboree Road. The existing Class II bike lanes and existing street lighting within Jamboree Road would remain in place.

As shown in **Figure 5 – Right-of-Way/Retaining Wall Impacts**, The Project would include construction within the right-of-way of Peters Canyon Regional Park to accommodate construction of the shared-use bike path along Jamboree Road. The permanent right-of-way that would be acquired is located on a slope easement and existing parkway along Jamboree Road. A retaining wall (approximately 3,400 feet long and 3-5 feet in height) would be constructed where the Class I shared-use path would encroach into the cut slopes adjacent to Peters Canyon Regional Park. The existing retaining wall near the Santiago Aqueduct Commission/Metropolitan Water District of Southern California facilities would be approximately 3 to 5 feet in height and incorporate drainage V-ditches. Further improvements along Jamboree Road would include the permanent removal of existing retaining curbs and sand bags along the west side of Jamboree Road to accommodate the proposed Class I shared-use path and drainage V-ditches.

The Project would include the installation of lodge pole fencing along the west side of Jamboree Road. The fence would serve as a barrier between the Class I shared-use path and the existing roadway edge due to the close proximity of the two facilities.

#### **Pioneer Road Improvements**

Project improvements along Pioneer Road would include signing and striping to delineate the proposed Class II buffered bike lanes. The existing sidewalk and landscaping would remain intact. The Class II buffered bike lanes would be incorporated within the existing 8-foot bike lanes, one in each direction of the road.

#### **Other Improvements**

The Proposed Project would include intersection improvements (reconstruction of existing curb ramp and inclusion of way finding signage) at Jamboree Road and Pioneer Road to connect the proposed Class II buffered bike lanes to the existing trails on the south, and to the proposed Class I shared-use path to the existing Class I path on the north, along the west side of Jamboree Road.

Bike path and bike lane wayfinding signage would be installed throughout the Project Site to guide users of the new bikeway alignment.

In addition, landscaping restoration, including planting of native grasses and some shrubs would be established along a limited segment of the Project along Jamboree Road between Peter's Canyon Road and Canyon View Road on either side of the Class I shared-use path. In addition, the Project proposes to restore ornamental landscaping including replacing trees removed by construction along Jamboree Road, extending north from Pioneer Road adjacent to the Vidorra residential area.

#### 3.4 Construction

Construction of the Project is estimated to occur over 12 months, starting in the year 2023. Subphases of construction would include clearing of existing vegetation, demolition of the existing sidewalk and other concrete improvements, site excavation, grading, utility construction, concrete bikeway construction, and signing and striping installations, as shown on **Table 2**.

		_			
Phase	Approximate Timeline	Description			
Phase 1	2 months	Demolition and Site Preparation			
Phase 2	9 months	Construction of Retaining Walls and Concrete Bikeway			
Phase 3	1 month	Installation of final striping, signs and landscaping.			

 Table 2:
 Construction Phasing

Staging of construction equipment would occur at two locations in the northern portion of the Project Site as shown in **Figure 6** – **Proposed Staging Areas**. Staging Area No. 1 is located off Jamboree Road, at the intersection of the gated private access road and Peters Canyon Road, located within Peters Canyon Regional Park. Staging Area No. 2 would be located approximately 1,320 feet northeast from Staging Area No. 1 within the Peters Canyon Regional Park parking lot, located at 8548 Canyon View Avenue.



SOURCE: Mapbox;; Mark Thomas; ESA, 2020.

Peters Canyon Bikeway Extension Project Figure 5 Right-of-way/Retaining Wall Impacts

ESA



Colored (Citana		
Peters Canyon Bikeway Extension Project Area of Potential Effects		<ul> <li>Project Site</li> <li>Staging Area</li> <li>Parcels</li> </ul>
Jonathan Wright, Caltrans District 12 PQS Lead Archaeological Surveyor	Date	02,000 Feet
Tifini Tran, Caltrans District 12 Local Assistance Engineer	Date	

SOURCE: OCPW, 2020.

Peters Canyon Bikeway Extension Project

Figure 6 Proposed Staging Areas

ESA

## **Chapter 4: Environmental Evaluation**

#### 4.1 Analysis Methodology

Analysis of potentially significant impacts regarding each of the environmental factors identified in Table 5 below is based on the project site environmental setting, project description, and the thresholds of significance. Potentially significant impacts that are reduced below the level of significance by recommended mitigation measures will detail how the potentially significant impact is reduced. Potentially significant impacts that are unable to be reduced below the level of significance will detail the various mitigation options applied and why none would reduce the impact.

The analysis will consider the whole of the actions and include the following:

- Onsite impacts
- Offsite impacts
- Short-term construction impacts
- Long-term operational impacts
- Direct impacts
- Indirect impacts
- Cumulative impacts

#### 4.2 Environmental Factors Potentially Affected

This document incorporates the Environmental Checklist Form from CEQA Guidelines Appendix G.

**Table 3** lists the topical environmental factors that are evaluated in this chapter followed by their respective section numbers within this chapter. Environmental factors unchecked indicate that no "Potentially Significant Impacts" would result from Project implementation. Therefore, all of the environmental factors resulted in "No Impact", "Less than Significant Impact", or "Less than Significant" with mitigation measures or County Standard Conditions of Approval incorporated into the Project. Environmental factors that are checked have at least one threshold of significance requiring mitigation or County Standard Conditions of Approval.

#### Table 3: Environmental Factors Potentially Affected

	Aesthetics (4.5)	Mineral Resources (4.16)
	Agriculture & Forestry Resources (4.6)	□ Noise (4.17)
	Air Quality (4.7)	$\Box$ Population & Housing (4.18)
$\boxtimes$	Biological Resources (4.8)	Public Services (4.19)
$\boxtimes$	Cultural Resources (4.9)	Recreation (4.20)
	Energy (4.10)	Transportation (4.21)
$\boxtimes$	Geology and Soils (4.11)	☐ Tribal Cultural Resources (4.22)
	Greenhouse Gas Emissions (4.12)	Utilities & Service Systems (4.23)
	Hazards & Hazardous Materials (4.13)	☐ Wildfire (4.24)
	Hydrology & Water Quality (4.14)	Mandatory Findings (4.25)
	Land Use & Planning (4.15)	

#### 4.3 Thresholds of Significance

Thresholds of significance are identifiable quantitative, qualitative or performance level standards of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by a Lead Agency and compliance with which means the effect will normally be determined to be less than significant (Guidelines §15064.7(a)).

The County relies on the topical environmental factors listed in Appendix G of the State CEQA Guidelines, as well as its Local CEQA Procedures Manual, to assist in the determination of a potentially significant impact. The County may, depending on the circumstances of a particular project, use specific thresholds of significance on a case-by-case basis as provided by CEQA Guidelines Section 15064.7(b).

#### 4.4 Environmental Baseline

To adequately determine the significance of a potential environmental impact, the environmental baseline must be established. Guidelines Section 15125(a) states in pertinent part that the existing environmental setting will normally constitute the baseline physical conditions that will assist the County in a determining if an impact is significant.

Therefore, the environmental baseline for this Project constitutes the existing physical conditions as they exist at the time that the environmental process commenced.

<b>4.5 Aesthetics</b> <i>Except as provided in Public</i> <i>Resources Code Section 21099, would</i> <i>the project:</i>	Potentially Significant 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?				$\boxtimes$
<ul> <li>c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?</li> </ul>				
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?				

**Response to Question a):** According to the Natural Resources Element of the City of Orange General Plan, scenic vistas are characterized as hillsides, ridgelines, or open space areas that provide a unifying visual backdrop to the urban environment (City of Orange 2010). The City of Tustin also recognizes important scenic resources, specifically in East Tustin, which includes the Peters Canyon ridgeline (City of Tustin 2018).

The Proposed Project would consist of construction of a new shared-use Class I and buffered (striped) Class II bike path along Jamboree Road and Pioneer Road, respectively. Located directly northwest, northeast, and east of the Project Site is the Peters Canyon Regional Park, open space, and Peters Canyon Ridgeline, which are recognized as scenic vistas within the City of Tustin and City of Orange. Project construction would consist of vegetation removal along Jamboree Road, demolition of existing sidewalk and other concrete improvements, site excavation, grading, utility construction, concrete bikeway construction, and signing and striping installations. Construction of the Project would be temporary, consist of relatively low-lying groundwork activities, and would not block views to the open space or the surrounding ridgelines. As the northern portion of the Project Site is located at a lower elevation than the surrounding open space and adjacent ridgelines, views to a scenic vista would be largely uninterrupted. Further, the proposed retaining wall (approximately 3,440 feet long and 3-5 feet in height) is anticipated to be approximately three to five feet in height, which would not create a substantial obstruction of the view line

(Appendix D), and all landscaping improvements would be consistent in height with existing landscaping. As such, the Project would not have an adverse effect on a scenic vista, and impacts would be **less than significant**. No mitigation is required.

**Response to Question b):** Caltrans does not designate any state scenic highways in the local vicinity of the Project Site. The nearest state highway eligible for designation into the State Scenic Highway Program is located approximately 6.1 miles north near the Santa Ana Canyon (Caltrans 2020). The Cities of Tustin and Orange do not identify the Project Site as a scenic highway or located adjacent to a scenic highway (City of Tustin 2018; City of Orange 2010). Construction of the Project would occur entirely within an existing transportation corridor, and no trees, rock outcroppings, or historic buildings within a state scenic highway would be affected. As such, the Project would not substantially damage scenic resources within a state scenic highway, and there would be **no impact**. No mitigation is required.

**Response to Question c):** The Project Site is located within an urbanized area in the cities of Tustin and Orange. Surrounding land uses along the southern half of the Project Site primarily consist of single-family residential housing developments and other public facilities (such as schools and neighborhood parks). The Peters Canyon Regional Park is located to the north west of the Site, with unincorporated open space and SR-261 to the east. Within the Project limits, Jamboree Road has two lanes of traffic in each direction, with a 30-foot-wide landscaped median, Class II bike lane on both sides, and a sidewalk on the west side. Pioneer Road has one lane of traffic in each direction, and a two-way left turn. In addition, Pioneer Road has a sidewalk and Class II bike lane on both sides.

The Project would construct a new shared-use Class I and buffered (striped) Class II bike path along Jamboree Road and Pioneer Road, respectively. The Project would not change the functional classifications of the existing roadways. Specific improvements that would change the visual character of the Project Site include relocation of above-ground utilities (e.g., electrical cabinets, fire hydrants) and a retaining wall, construction of pedestrian fencing along the west side of Jamboree Road, landscaping improvements, wayfinding signage, and the addition of the bike lanes. Construction activities associated with the Project could temporarily alter the Project Site's visual character through the introduction of construction equipment and materials; however, construction activities would be temporary in nature and all construction-related equipment would be removed following completion. While the Project would include visual changes along Jamboree Road and Pioneer Road, the use of the Site, landscaping improvements, and post-project views are anticipated to be similar to the existing conditions of a transportation corridor. In addition, the Project would be in compliance with all applicable development standards in the cities of Tustin and Orange County. No zoning changes would occur with the Proposed Project. Therefore, the Project, located in an urbanized area, would not conflict with applicable zoning or other regulations governing scenic quality. A less than significant impact would occur. No mitigation is required.

**Response to Question d):** Jamboree Road and Pioneer Road are existing transportation corridors, which contain cars, streetlights, and signs that emit light and glare during the day and night. The existing street lighting within Jamboree and Pioneer Roads would remain in place throughout construction and operation of the Project. Construction of the Proposed Project would occur during the daytime, within the hours of 7:00a.m. to 7:00p.m. Light and glare associated with construction equipment in the daytime is not expected to substantially exceed existing conditions. The Proposed Project would install new wayfinding signage and lighting, however, these be designed in compliance with the Orange County Standard Plans and the Manual on Uniform Traffic Control Devices (MUTCD), which includes standards for downward shielded lighting and anti-reflective materials (DPW 2018; FWA 2009). As such, the Proposed Project would not create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area, and **a less than significant impact** would occur. No mitigation is required.

4.6	Agriculture and Forestry Resources				
In d agra envi May Agr Asse the c as a asse farm timp timb envi may the c and state inch Asse Lege carl prot by t Boa	etermining whether impacts to icultural resources are significant ironmental effects, lead agencies y refer to the California icultural Land Evaluation and Site essment Model (1997) prepared by California Dept. of Conservation n optional model to use in essing impacts on agriculture and nland. In determining whether acts to forest resources, including berland, are significant ironmental effects, lead agencies y refer to information compiled by California Department of Forestry Fire Protection regarding the e's inventory of forest land, uding the Forest and Range essment Project and the Forest acy Assessment project; and forest bon measurement methodology yided in Forest Protocols adopted he California Air Resources rd. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) C F S a p a C n	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), s shown on the maps prepared oursuant to the Farmland Mapping nd Monitoring Program of the California Resources Agency, to non-agricultural use?				
b) C a A	Conflict with existing zoning for gricultural use, or a Williamson Act contract?				
c) C c d 1 b 4 T b 5	Conflict with existing zoning for, or ause rezoning of, forest land (as lefined in Public Resources Code 2220 (g)), timberland (as defined by Public Resources Code Section 526), or timberland zoned Timberland Production (as defined by Government Code Section (1004)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 forest land to non-forest use?		

**Response to Question a):** According to the City of Tustin General Plan, the City of Tustin includes very little undeveloped land, most of which is within the Tustin Legacy community, which is located approximately 4.6 miles south of the Project Site (City of Tustin 2018). Additionally, the City of Orange does not identify the Project Site as being within or in close proximity to existing farmland or land zoned for agricultural use (City of Orange 2010). As specified by the Farmland Mapping and Monitoring Program, the Project Site is classified as Urban and Built-Up Land and Other Land, which do not contain any agricultural uses (DOC 2020). The Project would construct a new shared-use Class I and Class II path along existing roadways and would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as mapped within the Farmland Mapping and Monitoring Program, and there would be **no impact**. No mitigation is required.

**Response to Question b):** As discussed above in Response 4.6a, the Project Site does not contain any existing agricultural uses, nor is the Project Site zoned for agricultural use. Implementation of the Project would not result in any conflicts with agricultural zoning nor would the Project conflict with any existing Williamson Act Contracts. As such, there would be **no impact**. No mitigation is required.

**Response to Question c):** Forestry operations do not occur on or within the vicinity of the Project Site. According to the Timberland Conservation Program, the Project Site is not designated as timberland or public lands with forests (CDFW 2015), and the cities of Orange and Tustin do not include land zoned as forest land (City of Orange 2010; City of Tustin 2018). As a transportation corridor, operation of the Project would be similar to that of the existing condition, and the Project would not conflict with existing zoning of forestland, timberland, or timberland zoned Timberland Production. **No impact** would occur. No mitigation is required.

**Response to Question d):** As discussed above in Response 4.6c, the Project Site does not contain any timberland or land zoned for Timberland Production. The Project Site currently operates as a developed roadway, located in a suburban area within the cities of Tustin and Orange. The Project would not result in the loss of any forest land or conversion of any land to non-forest use. As such, there would be **no impact**. No mitigation is required.

**Response to Question e):** As discussed in Responses 4.6a through 4.6d, the Project Site does not contain any agricultural, timberland, or forest land uses. The Project Site is located within an area that is classified as Urban and Build Up Land as well as Other Land, within the Farmland Mapping and Monitoring Program (DOC 2020) and does not contain any forest land or timberlands (CDFW 2015). The Proposed improvements would occur within an existing roadway, and would not involve any changes to the existing environment, in which would result in the conversion of farmland to non-farmland use or forest land to non-forest land use; there would be **no impact**. No mitigation is required.

4.	7 Air Quality				
Wi crt ait ait rei de	here available, the significance teria established by the applicable quality management district or pollution control district may be ied upon to make the following terminations. Would the project:	Potentially Significant 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?				
c)	Expose sensitive receptors to substantial pollutant concentrations?			$\boxtimes$	
d)	Result in other emissions (such as those leading to odors affecting a substantial number of people?			$\boxtimes$	

**Response to Question a):** The Project Site is located within the South Coast Air Basin (Basin). Air quality planning for the Basin is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The Project would be subject to the SCAQMD's Air Quality Management Plan (AQMP), which contains a comprehensive list of pollution control strategies directed at reducing emissions and achieving ambient air quality standards. These strategies are developed, in part, based on regional population, housing, and employment projections prepared by the Southern California Association of Governments (SCAG).

The 2016 AQMP was prepared to accommodate growth, reduce the high levels of pollutants within the areas under the jurisdiction of SCAQMD, return clean air to the region, and minimize the impact on the economy (SCAQMD, 2016). Projects that are consistent with the assumptions used in the AQMP do not interfere with attainment because the growth is included in the projections utilized in the formulation of the AQMP. Thus, projects, uses, and activities that are consistent with the applicable growth projections and control strategies used in the development of the AQMP would not jeopardize attainment of the air quality levels identified in the AQMP, even if it would individually exceed the SCAQMD's numeric indicators.

#### Construction

Construction activities associated with the Proposed Project have the potential to generate temporary criteria pollutant emissions through the use of heavy-duty construction equipment and through vehicle trips generated from worker trips, vendor and haul trucks traveling to and from the Proposed Project area. In addition, fugitive dust emissions would result from site preparation, grading, and drainage/utilities installation. Construction emissions can vary substantially from

day to day, depending on the level of activity, the specific type of construction activity, and prevailing weather conditions. The assessment of construction air quality impacts considers each of these potential sources.

Under this criterion, the SCAQMD recommends that lead agencies demonstrate that a project would not directly obstruct implementation of an applicable air quality plan and that a project be consistent with the assumptions (typically land-use related) upon which the air quality plan is based. The Project would result in an increase in short-term employment compared to existing conditions. Being relatively small in number and temporary in nature, construction jobs under the Project would not conflict with the long-term employment projections upon which the AQMP is based. Control strategies in the AQMP, potentially applicable to control temporary emissions from construction activities, include ONRD-04 and OFFRD-01,<sup>1</sup> which would be included as project design features (PDF's), and are intended to reduce emissions from on-road and off-road heavy-duty vehicles and equipment by accelerating the replacement of older, emissions-prone engines with newer engines that meet more stringent emission standards. Descriptions of measures PDF-ONRD-04 and PDF-OFFRD-01 are provided below:

- **PDF-ONRD-04** Accelerated Retirement of Older On-Road Heavy-Duty Vehicles: This measure seeks to replace up to 1,000 heavy-duty vehicles per year with newer or new vehicles that at a minimum, meet the 2010 on-road heavy-duty NO<sub>X</sub> exhaust emissions standard of 0.2 grams per brake horsepower-hour (g/bhp-hr).
- **PDF-OFFRD-01 Extension of the Soon Provision for Construction/Industrial Equipment:** This measure continues the Surplus Off-Road Option for NO<sub>X</sub> (SOON) provision of the statewide In-Use Off-Road Fleet Vehicle Regulation beyond 2014 through the 2023 timeframe.

As described in sections below, this Project would have less than significant construction emissions of criteria pollutants even without mitigation. Therefore, the Project would be consistent with the AQMP. Additionally, the Project would comply with CARB requirements to minimize short-term emissions from on-road and off-road diesel equipment. The Project would also comply with SCAQMD regulations for controlling fugitive dust pursuant to SCAQMD Rule 403, incorporated as a PDF, which requires the construction contractor to apply water spray/mists or similar suppressant (e.g., SoilSeal) at least 3 times per day on active areas of disturbance and unpaved roads, and limit truck speed to 15 miles per hour or less on unpaved roads to minimize dust on unpaved roads at the construction site.

Compliance with these requirements is consistent with and meets or exceeds the AQMP requirements for control strategies intended to reduce emissions from construction equipment and activities. Because the Project would not conflict with the control strategies intended to reduce emissions from construction equipment, the Project would not conflict with or obstruct implementation of the AQMP, and impacts would be less than significant.

<sup>&</sup>lt;sup>1</sup> AQMP measure ONRD-04 applies to on-road mobile sources and is the accelerated retirement of older on-road heavy-duty vehicles to reduce emissions of NO<sub>x</sub> and particulate matter. AQMP measure OFFRD-01 applies to off-road mobile sources and is the extension of the Surplus Off-Road Opt-In for NO<sub>x</sub> (SOON) provision for construction/industrial equipment to encourage the accelerated retirement of older off-road heavy-duty equipment to reduce emissions of NO<sub>x</sub>. <u>http://www.aqmd.gov/docs/default-source/clean-air-plans/air-qualitymanagement-plans/2012-air-quality-management-plan/final-2012-aqmp-(february-2013)/chapter-4-final-2012.pdf, accessed October 2020.</u>

#### Operation

The Project consists of a bikeway along an existing roadway. Operation of the Project would not generate emissions as it would not accommodate or result in added trips from motor vehicles and would not result in the generation of housing or employment. Overall, the Project would not conflict with the growth projects identified in the AQMP and would not conflict with or obstruct implementation of the AQMP's or either of the City's strategies and polices intended to reduce criteria pollutant emissions. Therefore, impacts would be less than significant.

The Project Site is located within the SCAB, which is characterized by relatively poor air quality. State and federal air quality standards are often exceeded in many parts of the Basin. The Project would contribute to local and regional air pollutant emissions during construction (short-term or temporary) and project occupancy (long-term). However, based on the following analysis, construction and operation of the Project would result in less than significant impacts relative to the daily significance thresholds for criteria air pollutant emissions established by the SCAQMD for construction and operational phases.

#### **Construction Impacts**

Based on criteria set forth in the SCAQMD CEQA Air Quality Handbook (SCAQMD, 1993), a project would have the potential to violate an air quality standard or contribute substantially to an existing violation and result in a significant impact with regard to construction emissions if regional emissions from both direct and indirect sources would exceed any of the following SCAQMD prescribed threshold levels: (1) 75 pounds a day for volatile organic compounds (VOCs), (2) 100 pounds per day for (NO<sub>X</sub>, (3) 550 pounds per day for carbon monoxide (CO), (4) 150 pounds per day for sulfur oxides (SO<sub>X</sub>), (5) 150 pounds per day for respirable particulate matter (PM10), and (6) 55 pounds per day for fine particulate matter (PM2.5).

Daily regional emissions during construction are forecasted by assuming a conservative estimate of construction activities (i.e., assuming all construction occurs at the earliest feasible date) and applying the mobile source and fugitive dust emissions factors. The emissions have been estimated using the CalEEMod software (version 2016.3.2), an emissions inventory software program recommended by the SCAQMD, and the CARB on-road vehicle EMFAC2017 model. CalEEMod is based on outputs from OFFROAD and EMFAC, which are emissions estimation models developed by CARB and used to calculate emissions from construction activities, including on- and off-road vehicles. On-road emissions have been calculated outside of CalEEMod using the most recent version of EMFAC (2017). The input values used in this analysis were adjusted to be project-specific based on equipment types and the construction schedule. These values were then applied to the construction phasing assumptions used in the criteria pollutant analysis to generate criteria pollutant emissions values for each construction activity. This emissions analysis for all construction activities includes compliance with mandatory SCAQMD Rule 403 measures regarding the control of fugitive dust.

Construction of the Project is estimated to last approximately one year, tentatively scheduled to begin January 2023 and conclude December 2023. Construction duration by phase is provided in **Table 4**. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA guidelines. Site specific construction fleet may vary due to specific Project needs at the time of construction. The duration of construction activity and associated construction equipment was estimated based on consultation with the Project applicant.

Activity	Start Date	End Date	Duration (Days)
Demolition	2023	2023	21
Site Preparation	2023	2023	20
Grading	2023	2023	23
Utility & Sidewalk Construction	2023	2023	86
Bikeway Construction	2023	2023	88
Striping	2023	2023	21
SOURCE: ESA 2020			

Table 4:	<b>Estimated Construction Schedule</b>
----------	----------------------------------------

The maximum daily regional emissions from these activities are estimated by construction phase and compared to the SCAQMD significance thresholds. Maximum daily emissions are calculated for each criteria pollutant. As shown in **Table 5**, emissions resulting from Project construction would not exceed any criteria pollutant thresholds established by the SCAQMD. Therefore, impacts would be considered **less than significant**. No mitigation is required.

Source	VOC	NO <sub>X</sub>	СО	$SO_2$	PM10 <sup>a</sup>	PM2.5 <sup>a</sup>
Demolition		22.0	20.2	0.1	1.5	1.0
Site Preparation	2.7	27.6	20.2	0.1	8.5	5.1
Grading	1.8	19.3	15.9	0.0	3.5	2.1
Utility & Sidewalk Construction	1.6	14.6	18.3	0.0	1.5	0.9
Bikeway Construction	1.1	9.0	12.8	0.0	0.7	0.5
Striping	2.5	1.3	2.2	0.0	0.2	0.1
<b>Maximum Daily Emissions</b>	<b>2.</b> 7	27.6	20.2	0.1	8.5	5.1
SCAQMD Regional Significance Thresholds <sup>b</sup>	75	100	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

Table 5: Maximum Regional Construction Emissions – without Mitigation(pounds per day)

#### NOTES:

Totals may not add up exactly due to rounding in the modeling calculations. Detailed emissions calculations are provided in Appendix A.

<sup>a</sup> Emissions include fugitive dust control measures consistent with SCAQMD Rule 403.

<sup>b</sup> Localized Significance Thresholds (LST) were for a 5-acre project site with a 25-meter receptor distance.

SOURCE: ESA, 2020

#### **Operational Impacts**

The Project consists of a bikeway along an existing roadway. Operation of the Project would not generate emissions as it would not accommodate or result in added trips from motor vehicles. Therefore, Project operations would be **less than significant**. No mitigation is required.

**Response to Question b):** The Project would result in the emission of criteria pollutants both during construction and operation for which the Project area is in non-attainment. A significant impact may occur if a project would add a cumulatively considerable contribution of a federal or state non-attainment pollutant. The Basin is currently in non-attainment for ozone, PM10, and PM2.5.

The SCAQMD's approach for assessing cumulative impacts related to operations is based on attainment of ambient air quality standards in accordance with the requirements of the Federal and State Clean Air Acts. As discussed earlier, the SCAQMD has developed a comprehensive plan, the 2016 AQMP, which addresses the region's cumulative air quality condition.

A significant impact may occur if a project were to add a cumulatively considerable contribution of a federal or state non-attainment pollutant. The Basin is currently in non-attainment for ozone (federal and state standards), PM10 (state standards only) and PM2.5 (federal and state standards); therefore, related projects could cause ambient concentrations to exceed an air quality standard or contribute to an existing or projected air quality exceedance. Cumulative impacts to air quality are evaluated under two sets of thresholds for CEQA and SCAQMD.

In particular, CEQA Guidelines Section 15064(h)(3) provides guidance in determining the significance of cumulative impacts. Specifically, Section 15064(h)(3) states in part that:

"A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the cumulative problem (e.g., water quality control plan, air quality plan, integrated waste management plan) within the geographic area in which the project is located. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency ..."

For purposes of the cumulative air quality analysis with respect to CEQA Guidelines Section 15064(h)(3), the Project's incremental contribution to cumulative air quality impacts is determined based on compliance with the SCAQMD adopted 2016 AQMP. As discussed previously under Response 4.7a, the Project would be consistent with the 2016 AQMP and would not have a cumulatively considerable air quality impact. The Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategies (RTP/SCS) projects that employment would increase from 1,730,000 in 2020 to 1,870,000 in 2035, an increase of 140,000 jobs. Although the Project's employment would increase temporarily during construction compared to existing conditions, the Project would generate up to 73 jobs during utilities and sidewalk construction. This temporary growth in employment would account for 0.05 percent of the projected increase in employment and would be well within the employment projections for the County of Orange.

As the Project is not part of an ongoing regulatory program, the SCAQMD also recommends that project-specific air quality impacts be used to determine the potential cumulative impacts to regional air quality. As discussed above under Response 4.7a, peak daily emissions of construction and operation-related pollutants would not exceed SCAQMD regional significance thresholds. By applying SCAQMD's cumulative air quality impact methodology, even though implementation of the Project would result in an addition of criteria pollutants, in conjunction with related projects in the region, cumulatively significant impacts would not occur. In addition, as discussed in Response 4.7c, below, construction of the Project is not expected to result in a cumulatively considerable net increase of any criteria pollutant for which the SCAQMD has established a localized impact threshold. Therefore, the emissions of non-attainment pollutants and precursors generated by the Project would be **less than significant** and would not result in a cumulatively considerable air quality impact. No mitigation is required.

**Response to Question c):** Certain population groups are especially sensitive to air pollution and should be given special consideration when evaluating potential air quality impacts. These population groups include children, the elderly, persons with pre-existing respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. As defined in the SCAQMD CEQA Air Quality Handbook, a sensitive receptor to air quality is defined as any of the following land use categories: (1) long-term health care facilities; (2) rehabilitation centers; (3) convalescent centers; (4) retirement homes; (5) residences; (6) schools; (7) parks and playgrounds; (8) child care centers; and (9) athletic fields. Sensitive receptors within a quartermile radius of the Project boundary include adjacent residential land uses along the proposed alignment, along with Peters Canyon Regional Park, Pioneer Road Park, Cedar Grove Park, Creator's Corner Pre-School, Peter's Canyon Elementary School, and Pioneer Middle School.

The localized air quality analysis was conducted using the methodology described in the SCAQMD *Localized Significance Threshold Methodology* (June 2003, revised July 2008), which relies on on-site mass emission rate screening tables and project-specific dispersion modeling typically for sites greater than five acres, as appropriate (SCAQMD, 2008). The localized significance thresholds are applicable to NO<sub>x</sub>, CO, PM10, and PM2.5. For NO<sub>x</sub> and CO, the thresholds are based on the ambient air quality standards. For PM10 and PM2.5, the thresholds are based on requirements in SCAQMD Rule 403 (Fugitive Dust) for construction and Rule 1303 (New Source Review Requirements) for operations. The SCAQMD has established screening criteria that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance thresholds and therefore not cause or contribute to an exceedance of the applicable ambient air quality standards without project-specific dispersion modeling. The screening criteria depend on: (1) the area in which the project is located, (2) the size of the project area, and (3) the distance between the project area and the nearest sensitive receptor.

SCAQMD's Methodology clearly states that "off-site mobile emissions from the Project should not be included in the emissions compared to LSTs." Therefore, for purposes of the LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered, plus the truck idling emissions (e.g., haul trucks and vendor trucks) that were calculated separately using the EMFAC emission factors for heavy-heavy-duty (HHD) vehicles. The closest existing sensitive receptors to the Project are adjacent to the proposed Project alignment. The localized significance threshold (LST) used for the localized significance impact analysis were based on a five-acre site in the Saddleback Valley Source-Receptor Area with sensitive receptors located adjacent to the Project Site (i.e., 25 meters).

#### **Construction Emissions**

**Table 6** identifies the localized impacts at the nearest receptor location in the vicinity of the Project area without mitigation. The localized emissions during construction activity would not exceed SCAQMD's localized significance thresholds. Therefore, impacts would be **less than significant**. No mitigation is required.

(pounds per day)						
Source	NO <sub>X</sub>	СО	PM10 <sup>a</sup>	PM2.5 <sup>a</sup>		
Demolition	21.5	19.7	1.13	1.0		
Site Preparation	27.5	18.2	8.3	5.0		
Grading	18.5	15.4	3.3	2.0		
Utility & Sidewalk Construction	14.4	16.3	0.7	0.7		
Bikeway Construction	8.9	12.3	0.4	0.4		
Striping	1.3	1.8	0.1	0.1		
Maximum Daily Emissions	27.5	19.7	8.3	5.0		
$\textbf{SCAQMD Localized Significance Thresholds}^{b}$	197	1,804	12	8		
Exceeds Threshold?	No	No	No	No		

# Table 6: Maximum Localized Construction Emissions – without Mitigation(pounds per day)

#### NOTES:

Totals may not add up exactly due to rounding in the modeling calculations. Detailed emissions calculations are provided in Appendix A.

<sup>a</sup> Emissions include fugitive dust control measures consistent with SCAQMD Rule 403.

<sup>b</sup> Localized Significance Thresholds (LST) were for a 5-acre project site with a 25-meter receptor distance.

SOURCE: ESA, 2020

#### **Operational Emissions**

According to SCAQMD LST methodology, LSTs would apply to the operational phase of a Proposed Project if the Project includes stationary sources or attracts mobile sources that may queue and idle at the site (e.g., warehouse or transfer facilities). With regard to on-site sources of emissions, the Project would not generate emissions resulting from sources such as natural combustion (on-site natural gas consumption for heating, such as natural gas combustion in broilers and water heaters) and landscaping equipment. Therefore, impacts would be **less than significant**. No mitigation is required.

#### Carbon Monoxide Hotspot

A carbon monoxide (CO) hotspot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near intersections. Projects may worsen air quality if they increase the percentage of vehicles in cold start modes by two percent or more; significantly increase traffic volumes (by five percent or more) over existing volumes; or worsen

traffic flow, defined for signalized intersections as increasing average delay at intersections operating at Level of Service (LOS) E or F or causing an intersection that would operate at LOS D or better without the Proposed Project, to operate at LOS E or F.

CO decreased dramatically in the Basin with the introduction of the automobile catalytic converter in 1975. No exceedances of CO have been recorded at monitoring stations in the Basin in recent years and the Basin is currently designated as a CO attainment area for both the CAAQS and NAAQS. As discussed below, it is not expected that CO levels at project-impacted intersections would rise to such a degree as to cause an exceedance of these standards.

#### Construction

While construction-related traffic on the local roadways would occur during construction, the increase of construction vehicle trips, up to a maximum of 73 workers and 29 trucks, to the existing daily traffic volumes on local roadways. According to the City of Tustin General Plan Circulation Element, Jamboree Road is classified as a Major Roadway that could accommodate a daily trip volume of 50,600 to obtain LOS D and a daily trip volume of 56,300 to obtain LOS E. The Project would generate a maximum of 102 daily construction vehicles. As discussed in Section 4.21, Transportation, any delays due to construction trips would be temporary and not considered to be significant and would therefore not result in CO hotspots. Additionally, construction-related vehicle trips would only occur in the short-term and would cease once construction activities have been completed. Therefore, Project construction related to CO hotspots would be **less than significant**. No mitigation is required.

#### Operation

The Project consists of a bikeway along an existing roadway. Operation of the Project would not generate emissions as it would not accommodate or result in added trips from motor vehicles. Therefore, Project operations related to CO hotspots would be **less than significant**. No mitigation is required.

#### **Toxic Air Contaminants**

Concentrations of toxic air contaminants (TACs), or in federal parlance, hazardous air pollutants (HAPs), are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

Sensitive receptors are located adjacent to the Project Site. SCAQMD recommends that construction health risk assessments be conducted for substantial sources of diesel particulate matter (DPM) emissions (e.g., earth-moving construction activities) in proximity to sensitive receptors and has provided guidance for analyzing mobile source diesel emissions. However, localized DPM emissions (strongly correlated with PM2.5 emissions) are less than significant (as shown in **Table 6**, above). Although the localized analysis does not directly measure health risk impacts, it does provide data that can be used to evaluate the potential to cause health risk impacts. The low level of PM2.5 emissions coupled with the short-term duration of construction activity resulted in an overall low level of DPM concentrations in the Project area. Furthermore, compliance with the CARB ATCM anti-idling measure, which limits idling to no more than five minutes at any location for diesel-fueled commercial vehicles, further minimized DPM emissions

in the Project area. Sensitive receptors would be exposed to emissions below thresholds, and construction TAC impacts are less than significant.

SCAQMD recommends that operational health risk assessments be conducted for substantial sources of DPM emissions (e.g., truck stops and warehouse distribution facilities) in proximity to sensitive receptors and has provided guidance for analyzing mobile source diesel emissions. The Project would not generate truck trips. Therefore, based on the limited activity of TAC sources TAC concentrations at off-site sensitive receptors, the Project would not warrant the need for a health risk assessment associated with on-site operational activities, and potential TAC impacts are expected to be **less than significant**. No mitigation is required.

**Response to Question d):** Potential activities that may emit odors during construction activities include the use of architectural coatings and solvents and the combustion of diesel fuel in on- and off-road equipment. SCAQMD Rule 1113 would limit the amount of VOCs in architectural coatings and solvents. In addition, the Project would comply with the applicable provisions of the CARB Air Toxics Control Measure regarding idling limitations for diesel trucks. Further, construction odor emissions would be temporary, short-term, and intermittent in nature and would cease upon completion of construction. Through adherence with mandatory compliance with SCAQMD Rules, no construction activities or materials are expected to create objectionable odors affecting a substantial number of people. Therefore, construction of the Project would result in **less than significant** impacts. No mitigation is required.

4.8 Biological Resources		Less than		
Would the project:	Potentially Significant Impact	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 or U.S. Fish and Wildlife Service?				
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. 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 provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				

**Response to Question a):** The Project Site consists of an existing transportation corridor with natural open space occurring on both sides of Jamboree Road in the northern portion of the Project Site. The southern portion of the Project Site, along Pioneer Road, is located within a residential neighborhood. As proposed construction along Pioneer Road would only consist of restriping and no other construction activities, the analysis is this section is focused on Jamboree Road, in areas where the Project could potentially affect biological resources.

According to the Natural Environment Study (Appendix B) prepared for the Project, the landscape on either side of Jamboree Road is primarily composed of native vegetation communities, including patches of willow scrub, coastal sage scrub (CSS), with some ornamental vegetation (ESA 2020). No special-status plant species or USFWS-designated critical habitat for any listed plant species occurs within the Project Site. Based on evidence of recent disturbance and habitat restoration, the potential for the narrow strip of proposed construction along the west side of Jamboree Road to support special status plant species is extremely low to nonexistent (ESA 2020).

Two species, the federally threatened coastal California gnatcatcher and the State and federally endangered least Bell's vireo, have been recently reported and were observed in the study area in Peters Canyon Regional Park west of Jamboree Road adjacent to the Project Site as noted in the Natural Environment Study (Appendix B). In addition, non-listed special-status wildlife species have potential to occur within the study area in the Regional Park and may forage occasionally on the Project site, along with common raptors and migratory song birds protected under the California Fish and Game Code (§3503 and §3503.5) and/or the federal Migratory Bird Treaty Act (MBTA).

The Project would include construction within the right-of-way of Peters Canyon Regional Park to accommodate construction of the shared-use bike path along Jamboree Road. A retaining wall (approximately 3,400 feet long and 3-5 feet in height) would be constructed where the Class I shared-use path would encroach into the cut slopes adjacent to Peters Canyon Regional Park. Permanent impacts associated with constructing the paved bike path and retaining wall include clearing and grubbing both native and non-native vegetation and encroachment on and/or removal of up to 40 mature non-native ornamental trees along the west side of Jamboree Road. Most of the ornamental vegetation, including 33 trees, occurs along the sidewalk adjacent to the Vidorra residential community and consists of non-native street trees including eucalyptus (*Eucalyptus* spp.), pine (*Pinus* spp.), olive (*Olea europaea*), and Peruvian pepper (*Schinus molle*) trees. Approximately 7 other Peruvian pepper trees also occur just off the sidewalk along Jamboree Road but in scattered locations north of the residential area. Several non-native pepper trees stand in a narrow landscaped strip between the existing pedestrian walkway and Jamboree Road just south of the intersection of Jamboree Road with Canyon View Avenue at the very north end of the Proposed Project.

Permanent impacts to approximately 0.77 acres of natural areas containing native upland vegetation will occur, north of the residential area, where the new bikeway and retaining wall will displace native vegetation along a very narrow strip on the west side of the existing sidewalk, wherever the new bikeway is wider than the current sidewalk. The permanent displacement will include an additional 3-foot-wide strip on the west side of the constructed concrete retaining wall. Within this 3-foot-wide "maintenance buffer" strip, the County will retain the ability to cut back or remove vegetation within this narrow strip at its discretion to prevent it from overhanging the bike path or overgrowing the retaining wall or from developing roots that may damage concrete or retaining wall foundations. Thus, the area is deemed to be permanently impacted.

Project implementation will also result in the removal of approximately 0.17 acres of ornamental landscaping and non-native grassland and ruderal (weedy) vegetation along the west side of Jamboree Road. Grubbing and grading during construction is also anticipated to result in

temporary disturbance of approximately 0.80 acre of native upland vegetation and 0.15 acre of ornamental landscaping and non-native grassland and ruderal (weedy) vegetation. No impacts are anticipated to any riparian vegetation that provides habitat for riparian-associated special status species such as the least Bell's vireo, yellow warbler, etc.

Coastal sage scrub vegetation provides habitat for a variety of wildlife, including special status species such as the California gnatcatcher and other avian and terrestrial species. However, as the narrow strip of potentially affected habitat lies directly adjacent to a busy arterial roadway, its habitat value to sensitive species is somewhat diminished in terms of nesting habitat value and also for foraging. Nesting and foraging uses typically drop considerably in close proximity to roadways. The displacement of a very narrow strip of native and non-native vegetation (amounting to less than one acre of permanent loss and less than one acre of temporary disturbance along a 4,800-foot section of the project) where it is considered to have somewhat diminished value as it lies directly adjacent to a busy arterial roadway, may be considered to be less than significant in terms of the potential impact of habitat displacement to special status species. With consideration of the NCCP/HCP as a participating landowner, and with recognition that the NCPP/HCP provides a mechanism to allow for small incremental impacts associated with planned infrastructure improvements while establishing a habitat conservation network to sustain these specials status species in this general area, this potential impact is considered **less than significant**.

Implementation of the Project may alsoresult in indirect temporary impacts during construction to individual special-status wildlife species that occur adjacent to the Project footprint. These indirect temporary impacts could include the potential for uncontrolled surface runoff that could transport sediment (i.e., from shoulder grading or stockpile areas) and equipment fluids outside the Project limits, elevated dust levels that could occur during construction, and introduction of noxious and invasive plant species that could spread into adjacent communities. Such impacts could potentially decrease the suitability of habitats adjacent to the Project footprint for special-status wildlife, leading to potential impacts to individual species. Implementation of **Mitigation Measures BIO-1 through BIO-4** would avoid or minimize impacts to special-status wildlife species and habitats potentially suitable for such species that may occur in or adjacent to the Project Site. With implementation of mitigation measures, impacts would be reduced to a **less than significant** level. Mitigation is required.

#### Mitigation Measures

- **MM-BIO-1** The limits of construction activities and staging for the project within or adjacent to Peters Canyon Regional Park shall be clearly marked with staking and flagging. Staking and flagging shall be checked and confirmed by OCPW or its biological monitor and no activity will be permitted beyond designated work areas without written authorization from OCPW including a record drawing identifying the revised limit.
- **MM-BIO-2** In order to obtain coverage under the Statewide General Permit for Discharges of Storm Water Associated with Construction Activity (Order 2009-0009-DWQ), the County must submit a Notice of Intent (NOI) and a Stormwater Pollution Prevention Plan (SWPPP) to the Regional Board in accordance with current procedures. Prior to the start of construction, a SWPPP will be prepared and a copy maintained on site during construction. The SWPPP will outline refueling locations, emergency response equipment and procedures for clean ups, and will include measures to control surface runoff and erosion, and will establish reporting requirements.
- **MM-BIO-3** Standard dust control measures such as watering and stabilization of soils will be implemented as appropriate to reduce fugitive dust during any pavement or ground disturbing activities. Best available control measures (BACMs) are prescribed and discussed in Table 1 of the SCAQMD Rule 403, available for reference here: https://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf?sfvrsn=4
- **MM-BIO-4** Impacts to nesting birds can be avoided by conducting project activities involving clearing and grubbing, grading, and/or construction using heavy equipment during the non-breeding season which extends from September 15 to February 15 for most species, and from July 1 to January 15 for raptors (birds of prey e.g., owls, hawks, falcons, etc.). If clearing and grubbing or construction cannot avoid the nesting season, the following measures would be implemented:
  - a. If project activities may not be constrained to the non-breeding season, a Nesting Bird Management Plan (NBMP) is recommended to be developed and submitted to CDFW prior to construction, with a request for agency concurrence with proposed nest protection measures and construction area buffers for different avian species. The NBMP will include specifications consistent with measures b and c, below, to avoid impacts to nesting birds during construction activity.
  - b. Prior to work during the avian nesting season (February 15 to September 15, or January 15 to July 1 for raptors), a qualified biologist will conduct a pre-construction survey of all suitable habitat for the presence of nesting birds within 500 feet of project construction activities on the west side of Jamboree Road. The nesting survey will be conducted not more than 7 days prior to vegetation removal or construction activities. If vegetation removal or construction activities are delayed for more than 7 days after the survey, a new pre-construction nesting bird survey will be required.
  - c. If active nests are identified during the pre-construction survey, an appropriate buffer (e.g., as prescribed in the NBMP) shall be established that restricts or prohibits construction activities until the nest is inactive. Buffers for least Bell's vireo will not be less than 500' unless reduced buffers are approved by USFWS and CDFW for this species. However, the NBMP may prescribe smaller buffers for other birds based on tolerances of different species and site-specific conditions. Buffers may be refined by a qualified biological monitor based on field observations of individual bird behavior.
  - d. A qualified biologist will delineate and flag buffer limits for construction avoidance until the nesting cycle is complete (i.e., nestling have fledged or the nest has failed). The qualified biologist may also recommend other measures to minimize disturbances to the nest, which may include, but are not limited to, full-time monitoring, work allowed only during limited time periods, restricting use of particular equipment, placement of sound barriers or visual barriers (e.g., noise blankets, straw bales).

**Response to Question b):** As detailed in the Natural Environment Study (Appendix B), according to the current California Natural Community List, only one natural community listed as a "sensitive" alliance, black willow thicket (aka Southern Willow Woodland), occurs in the study area, with patches present on either side of Jamboree Road near the northern project limit.

Although not specifically noted as "sensitive" on the List referenced above, the CSS plant communities, including deerweed scrub and cactus scrub subtypes, are considered to be of concern in Southern California as they provide suitable habitat for various special status species of wildlife, including coastal California gnatcatcher, orange-throated whiptail, and cactus wren, among others. Patches of black willow thicket associated with riparian features will not be directly impacted by the Proposed Project. Indirect impacts such as runoff into riparian habitat have the potential to occur. However, with implementation of Mitigation Measure MM-BIO-1, through MM-BIO-3, impacts to riparian habitat and to sensitive natural communities would be reduced to a **less than significant** level.

The impacts associated with the Proposed Project would involve permanent impacts, where implementation of demolition, grading, and construction of the Class 1 bikeway extension would permanently displace existing vegetation types and create a permanent hardscape. In addition to the permanent impacts represented by complete removal of a strip of vegetation as the result of construction, this analysis of permanent impacts (please see acreages presented below in Table 7) also includes a 3-foot-wide strip on the west side of the constructed concrete retaining wall, sidewalk edge, or curb, that is also considered to be permanently impacted. Although vegetation may become reestablished in this "maintenance buffer" strip, the County would retain the ability to cut back or remove vegetation within this narrow strip at its discretion to prevent it from overhanging the bike path or overgrowing the retaining wall or from developing roots that may damage concrete or retaining wall foundations. Thus, the area is deemed to be permanently impacted.

Natural areas containing native vegetation that may be disturbed during construction beyond the permanent construction edge and beyond the 3-foot-wide buffer, are considered to be temporarily impacted because these areas would be revegetated as described below in MM BIO-5. **Table 7** lists the vegetation communities and corresponding acreage that would be subject to permanent and temporary impacts with implementation of the Proposed Project where it will occur along the edge of Peters Canyon Regional Park. It is also noted that a small area overlapped by the project was recently revegetated next to Jamboree Road subsequent to ground-disturbing maintenance activities by Irvine Ranch Water District (IRWD). This revegetated area is currently being maintained to complete the restoration process. Within one small patch area included as part of the summed impacts identified below in Table 7, the Project would permanently displace 0.01-acre of CSS and temporarily disturb up to approximately 0.02-acre of CSS in the revegetated area.

Vegetation Community/Land Cover Type	Permanent Impacts <sup>a</sup> (Acres)	Temporary Impacts (Acres)
Native Upland Vegetation		
Coastal Sage Scrub/Buckwheat Scrub	0.563	0.606
Deerweed Scrub	0.202	0.191
Native Upland Habitat Subtotal	0.765	0.797
Non-Native Vegetation		
Ruderal	0.140	0.131
Ornamental Landscaping/Non-native Trees	0.028	0.018
Developed or Barren Areas		
Roads, Trails, Parking Areas, Other Dev.	0.026	0.052
Bare Ground	0.001	0.010
Total Acreage	0.960	1.008

# Table 7: Project Impacts to Vegetation Communities and Land Cover Types in orAdjacent to Peters Canyon Regional Park

#### NOTES:

<sup>a</sup> Permanent impacts include a 3-foot-wide buffer strip beyond the retaining wall to allow for discretionary maintenance such as vegetation removal.

**Table 8** identifies the areas that are anticipated to be permanently or temporarily impacted by the Proposed Project along the 0.25-mile-long segment of Jamboree Road where it lies adjacent to the local residential community north of Pioneer Road.

## Table 8: Project Impacts to Vegetation Communities and Land Cover TypesAdjacent to Vidorra Residential Area (Away from Regional Park)

Vegetation Community/Land Cover Type	Permanent Impacts (Acres)	Temporary Impacts (Acres)
Non-Native Vegetation	-	
Ornamental Landscaping/Non-Native Trees	0.208	0.078
Developed or Barren Areas		
Roads, Trails	0.023	0.001
Residential and Other Development	0.014	0.010
Total Acreage	0.245	0.089

Approximately 0.96-acre inside the NCCP/HCP Reserve (in Peters Canyon Regional Park) may be disturbed by construction of the Proposed Project, excluding the proposed Class 1 Bikeway improvements (plus a 3' maintenance buffer) and also excluding 0.05-acre identified as Roads, Trails, and Parking Areas in Table 7, above, which are already "improved" and disturbed. Mitigation for these temporarily disturbed areas is proposed to be provided, as prescribed below in MM BIO-5, through restoration of CSS at a minimum 1:1 ratio, along with revegetation of Ruderal vegetation and Bare Ground areas with CSS vegetation. Ornamental landscaping would be replaced in-kind or with native trees or shrubs as determined through coordination with the OC Parks staff.

Direct impacts to natural lands within the NCCP Reserve are addressed in the larger regional context of habitat conservation as provided for in, and through implementation of provisions in the NCCP/HCP and the Implementing Agreement for Permitted Uses within the Reserve. The NCCP/HCP established the Reserve system to conserve large areas containing natural habitat for wildlife while also allowing for certain uses and limited encroachment based on expected future land uses. In this case, construction of the Class 1 bikeway extension is expected to meet the applicable NCCP/HCP standard for such allowances for "construction, operation, and maintenance of new facilities necessary to support permitted recreation uses" and/or would otherwise be considered a necessary infrastructure improvement. However, as this particular project was not specifically identified in the NCCP/HCP as a Planned Activity, the limited impact to natural areas in the Reserve is understood to require a deduction from the County's allotment of credits which are reserved as compensation for just such impacts. This will involve deducting credits from the County's allotment of In-Reserve Credits (which allow for removal of CSS and other natural areas on a "per acre" basis) equivalent to the acreage displaced. This action is not considered mitigation because the NCCP/HCP allows for such impacts, and already provided "mitigation" at the regional level. The deduction of credits is simply necessary to conform with the provisions established under the NCCP/HCP and the Implementing Agreement which covers such activities. Therefore, as a specific requirement for this project Orange County Public Works will submit an intent to utilize credits from its remaining allotment to CDFW and USFWS in writing. The credit deduction will be counted at a 1:1 ratio to the acreage of native coastal sage scrub permanently displaced by the project. The accounting of credits expended will be reported in the annual status report and annual work plan which are transmitted to the Natural Communities Coalition.

Based on fulfillment of the County's obligations under the NCCP/HCP (i.e., spending allotted "In-Reserve" Credits), and with implementation of **Mitigation Measure MM-BIO-5**, in addition to **Mitigation Measures MM-BIO-1 through MM-BIO-4** above, impacts to riparian habitat and to sensitive natural communities would be reduced to a **less than significant** level. Mitigation is required.

#### **Mitigation Measures**

**MM-BIO-5 Restoration Plan.** OCPW shall require preparation of a revegetation plan by a qualified restoration specialist to establish appropriate native vegetation throughout all areas temporarily disturbed by the Peters Canyon Bikeway Extension Project within Peters Canyon Park, excluding areas identified as "Roads, Trails, Parking Areas, and Other Development." The plan shall identify all areas to be revegetated and include palettes of appropriate container plants and seed species. The plan shall specify a representative mix of native coastal sage scrub shrubs, herbs and native grass species derived from local sources (e.g., within 20 miles of the site) that mimics the existing scrub vegetation in adjacent areas. OC Parks shall review and approve the plan and will have the option to replace any ornamental vegetation with the same species, or may select native shrub or tree alternatives. The plan shall include planting and seeding materials and methods, timing, irrigation requirements, maintenance activities, and a requirement for annual progress reports. The plan shall include performance criteria to measure

success and standards shall include, at minimum, at least 75% cover by native species within 5 years from initial planting and seed application. OCPW shall contract for implementation of the approved plan with a qualified contractor with restoration expertise. Implementation shall commence within one calendar year from completion of construction. Progress Reports detailing the revegetation process shall be prepared and submitted within 12 months after initial plant and seed installation is substantially completed and annually by the same date for four subsequent years after the first report. Progress reports shall be provided to OC Parks, USFWS and CDFW representatives involved with NCCP/HCP oversight.

Response to Question c): According to the Natural Environment Study (Appendix B), unnamed drainages transect the Project Site via at least two underground culverts, however, none are exposed in any areas where the Proposed Project may affect them and construction will not directly affect these drainages. As Project activities are constrained to the narrow strip close to Jamboree Road where no potentially jurisdictional features occur, regulatory permitting under Sections 404 and 401 of the CWA and Section 1600 of the CFGC would not be required. However, the project has the potential to indirectly affect these resources by inadvertent or careless release of runoff during active construction which could be potentially significant. Likewise, if construction activities are not constrained to the identified project activity limits, material could be inadvertently discharged directly or be washed into these jurisdictional feature which could also result in a potentially significant impact, as well as constituting a potential violation of State and federal regulations that protect these resources. Implementation of Mitigation Measures **BIO-1 through BIO-3** listed above, would avoid encroachment and other potential indirect impacts to aquatic features or jurisdictional areas in the project vicinity. Therefore, coordination with regulatory agencies with regard to regulatory permits including USACE, CDFW, and RWCQB, is not anticipated to be warranted, and a less than significant impact would occur related to a substantial effect on state or federally protected wetlands. Mitigation is required.

**Response to Question d):** The Proposed Project lies at or near the edge of the urban and wildlands interface where development in the cities of Orange and Tustin comes up to the natural open space in the foothills of the Santa Ana Mountains. As detailed in the Natural Environment Study (Appendix B), most of the foothills and the Santa Ana Mountain range that lie to the north and east of the Project Site are undeveloped and contain various native plant communities that afford suitable habitat for many species of wildlife, including some special-status species. Much of this undeveloped area occurs within the Cleveland National Forest, and other areas are owned and/or managed by Orange County as regional park space. Just west and also southwest of the project lies the sole natural open space which is Peters Canyon Regional Park. The project lies along Jamboree Road which, along with the SR-261 just east of the Project area, forms a hazardous semi-obstruction for terrestrial species that may seek to access Peters Canyon Regional Park from the foothills to the east, or vice versa. However, avian species and windblown seed are not much obstructed by these two roadways. Therefore, the Project alignment is situated within a habitat area and in a landscape linkage and along one of the terrestrial roadways that poses a risk to some terrestrial wildlife seeking to utilize the available habitat connectivity between the Park and the much larger open space area to the east.

The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. Wildlife corridors link together areas of suitable habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The Project Site does not represent a corridor for wildlife movement to and from adjacent sites since it primarily follows Jamboree Road. As noted above, it may be perceived as lying partially within a habitat area and along a very active roadway that constitutes a hazard to access by terrestrial wildlife that may attempt to cross

Jamboree Road at grade. It should be noted that there is at least one below ground culvert crossing that provides wildlife movement opportunities under Jamboree Road (i.e., the Handy Creek culvert) and this culvert is not affected by the Proposed Project. In any case, the Proposed Project would not significantly change or add additional barrier to wildlife movement in or through the habitat area (Peters Canyon Regional Park and NCCP Reserve) or between this habitat area and the local foothills and mountains. Additionally, the Project Site is not located within any habitat linkages identified by the South Coast Missing Linkages report; the nearest linkage design identified is for the Santa Ana-Palomar Connection located approximately 12 miles southeast of the Project Site. As such, the Project would result in a **less than significant** impact related to the movement of wildlife species. No mitigation is required.

**Response to Question e):** The northern portion of the Project Site is located within the City of Orange, and the southern portion of the Project Site is located within the City of Tustin. The Project would include the removal of approximately 40 non-native trees, including up to 33 trees located within the Jamboree Road right-of-way along the segment adjacent to the Vidorra residential area. North of the residential area, adjacent to Peters Canyon Regional Park, up to 7 additional non-native trees are expected to be subject to removal. Regarding the project's impacts on biological resources, the removal of these non-native landscape trees is considered a **less than significant impact**, as these trees have low value to wildlife, particularly considering that they all occur within 10 to 15 feet of a heavily trafficked arterial roadway which diminishes their value considerably due to exposure to noise and disturbance. Regarding local tree protection ordinances, according to the City of Orange Municipal Code Chapter 12.28 - Street Trees, no person shall plant, or remove, any tree in any public street or right-of-way without having first obtained a permit and authorization from the Public Works Director/City Engineer, which would include the Project. In addition, the City of Tustin's Municipal Code Chapter 3 states it is unlawful for any person to trim, cut, remove, or destroy any tree or shrub on any public parkway without written approval of the City's Manager of Field Services. The construction contractor would be required to adhere to all local regulations prior to implementation of the Project, including obtaining applicable permits for tree removal. Therefore, as the Project would be required to comply with existing local regulations, implementation of the Project would result in **a less than** significant impact related to policies or ordinances protecting biological resources such as a tree preservation policy or ordinance. No mitigation is required.

**Response to Question f):** According to the Natural Environment Study (Appendix B), the Project Site is located adjacent to and within portions of the Reserve System established under the Orange County Central and Coastal Subregion Natural Community Conservation Plan and Habitat Conservation Plan (NCCP/HCP). Direct impacts to natural lands within the NCCP Reserve would be compensated for through implementation of mitigation consistent with provisions in the NCCP/HCP (including spending allotted CSS "In-Reserve" credits to off-set to CSS habitat displacement impacts) and the Implementing Agreement for Permitted Uses within the Reserve, as detailed above in Response 4.8b. Therefore, with the deduction from the allotted credits and with implementation of **Mitigation Measure BIO-5**, impacts related to any potential conflict with adopted Habitat Conservation Plans would be reduced to a **less than significant** level. Mitigation is required.

<b>4.9 Cultural Resources</b> <i>Would the project:</i>	Potentially Significant 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 pursuant to §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?				

The following discussion is based on *Archaeological Survey Report for the Peters Canyon Bikeway Extension Project, Tustin and Orange, Orange County, California* (Strauss, 2020), included as confidential **Appendix C**. The report included a records search at the South Central Coastal Information Center (SCCIC) housed at California State University, a California Native American Heritage Commission (NAHC) Sacred Lands File (SLF) search; Native American outreach; a desktop geoarchaeological review; and cultural resources survey.

**Response to Ouestion a):** The SCCIC records search, which included consideration of Section 15064 of the CEQA Guidelines, indicates 35 cultural resources have been previously recorded within a 1-mile radius of the Project area, of which 21 are prehistoric archaeological sites, four are historic-period archaeological sites, three are multicomponent archaeological sites, three are historic-period built resources, and four are prehistoric isolates. None of these 35 resources were documented within the Project area. The SLF search conducted by the NAHC indicates no known Native American cultural resources are located within the Project area or its vicinity. As a result of the Native American outreach conducted as part of the SLF search, three tribal representatives recommended Project-related ground disturbing activities be subject to cultural resources monitoring. The geoarchaeological review indicates much of the Project area is mapped as containing geologic units that are too old to be conducive to the preservation of archaeological deposits. The one exception is the portion of the Project Site located near the intersection of Jamboree Road and Canyon View Avenue, which is mapped as containing Holocene to late Pleistocene alluvial fan deposits, which are of appropriate age to contain subsurface archaeological deposits; however, this area has been subject to numerous disturbances, which may have destroyed subsurface archaeological deposits. The cultural resources surveys did not identify the presence of cultural resources within the Project Site.

No archaeological or historic architectural resources that qualify as historical resources were identified within the Project Site as a result of the archaeological survey report prepared for the Project. However, the geoarchaeological review indicates the portion of the Project Site near the intersection of Jamboree Road and Canyon View Avenue is mapped as containing alluvial deposits of appropriate age to contain subsurface archaeological deposits but that the area has also been subject to previous disturbances that may have destroyed or obscured subsurface archaeological deposits should they be present. Additionally, the SCCIC records search indicates 28 previously

recorded archaeological sites have been identified within 1 mile of the Project Site, of which 21 are prehistoric archaeological sites, four are historic-period archaeological sites, and three are multicomponent archaeological sites. Three tribal representatives were contacted as part the Native American outreach recommend monitoring based on the presence of these previously recorded resources. Although no historical resources have been identified within the Project Site, the presence of alluvial deposits of appropriate age to preserve subsurface archaeological deposits, though they may be disturbed, coupled with the number of previously recorded archaeological resources identified by the SCCIC, there exists the possibility the Holocene to Late Pleistocene deposits may contain pockets of undisturbed areas that contain subsurface archaeological deposits that may qualify as historical resources. Therefore, Project implementation has the potential to cause a substantial adverse change in the significance of a historical resource. With the incorporation of **Mitigation Measures MM-CUL-1 through MM-CUL-4**, potential impacts to unknown archaeological deposits that could qualify as historical resources would be reduced to **less than significant**. Mitigation is required.

## **Mitigation Measures**

- **MM-CUL-1:** Prior to the start of ground-disturbing activities, OCPW shall retain a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (U.S. Department of the Interior 2012) to support the implementation of cultural resources mitigation measures.
- **MM-CUL-2:** Prior to the start of ground-disturbing activities, a cultural resources sensitivity training shall be conducted for all construction personnel. Construction personnel shall be informed of the types of archaeological resources that may be encountered, and of the proper procedures to be enacted in the event of an inadvertent discovery of archaeological resources or human remains. OCPW shall ensure that construction personnel are made available for and attend the training and retain documentation demonstrating attendance.
- **MM-CUL-3:** An archaeological monitor (working under the direct supervision of the qualified archaeologist) shall observe all ground-disturbing activities occurring within portions of the Project mapped as containing Holocene to Late Pleistocene alluvial deposits. The qualified archaeologist, in coordination with OCPW, may reduce or discontinue monitoring if it is determined that the possibility of encountering buried archaeological deposits is low based on observations of soil stratigraphy or other factors. Archaeological monitoring shall be conducted by an archaeologist familiar with the types of archaeological resources that could be encountered within the Project area.. The archaeological monitor shall be empowered to halt or redirect ground-disturbing activities away from the vicinity of a discovery until the qualified archaeologist has evaluated the discovery and determined appropriate treatment. The archaeological monitor shall keep daily logs detailing the types of activities and soils observed, and any discoveries. After monitoring has been completed, the qualified archaeologist shall prepare a monitoring report that details the results of monitoring. The report shall be submitted to OCPW and any Native American groups who request a copy. A copy of the final report shall be filed at the South Central Coastal Information Center.
- **MM-CUL-4:** In the event of the unanticipated discovery of archaeological materials, OCPW shall immediately cease all work activities in the area (within approximately 50 feet) of the discovery until it can be evaluated by the qualified archaeologist.

Construction shall not resume until the qualified archaeologist has conferred with OC Public Works on the significance of the resource.

If it is determined that the discovered archaeological resource constitutes a historical resource or a unique archaeological resource pursuant to CEQA, avoidance and preservation in place shall be the preferred manner of mitigation. Preservation in place maintains the important relationship between artifacts and their archaeological context. Preservation in place may be accomplished by, but is not limited to, avoidance, incorporating the resource into open space, capping, or deeding the site into a permanent conservation easement. In the event that preservation is place is determined to be infeasible and data recovery through excavation is the only feasible mitigation available, an Archaeological Resources Treatment Plan shall be prepared and implemented by the qualified archaeologist in consultation with OCPW that provides for the adequate recovery of the scientifically consequential information contained in the archaeological resource. OCPW shall consult with appropriate Native American representatives in determining treatment for prehistoric or Native American resources to ensure cultural values ascribed to the resource, beyond that which is scientifically important, are considered.

**Response to Question b):** As noted above under Response 4.9a, no known archaeological resources were identified within the Project Site as a result of the archaeological survey report prepared for the Project. However, the presence of alluvial deposits of appropriate age to preserve subsurface archaeological deposits, though they may be disturbed, coupled with the number of previously recorded archaeological resources identified by the SCCIC, there exists the possibility the Holocene to Late Pleistocene deposits near the intersection of Jamboree Road and Canyon View Avenue may contain pockets of undisturbed areas that contain subsurface archaeological deposits that may qualify as unique archaeological resources. Therefore, Project implementation has the potential to cause a substantial adverse change in the significance of a unique archaeological resource. With the incorporation of **Mitigation Measures MM-CUL-1 through MM-CUL-4**, potential impacts to unknown archaeological deposits that could qualify as unique archaeological resources would be reduced to **less than significant**. Mitigation is required.

**Response to Question c):** No known formal or informal cemeteries or other burial places are known to exist within the Project Site. However, because the Proposed Project would involve ground-disturbing activities, it is possible that such actions could unearth, expose, or disturb previously unknown human remains. Implementation of **Mitigation Measure MM-CUL-5** would reduce potential impact to unknown human remains to **less than significant**. Mitigation is required.

#### Mitigation Measures

**MM-CUL-5:** If human remains are encountered, all work shall halt in the vicinity (within 100 feet) of the find and the Orange County Coroner shall be contacted in accordance with PRC Section 5097.98 and Health and Safety Code Section 7050.5. If the County Coroner determines that the remains are Native American, the NAHC shall be notified in accordance with Health and Safety Code Section 7050.5, subdivision (c), and PRC Section 5097.98 (as amended by Assembly Bill 2641). The NAHC shall designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98. Until the landowner has conferred with the MLD, OCPW shall ensure the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities take into account the possibility of multiple burials.

<b>4.10 Energy</b> <i>Would the project:</i>	Potentially Significant 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?				
b) Conflict or obstruct a state or local plan for renewable energy or energy efficiency?			$\boxtimes$	

**Response to Impact Question a):** The Project consists of roadway improvements for the addition of a bikeway. Therefore, the Project would not require energy resources during operations. The addition of proposed bike lanes would provide connectivity within the regional bikeway system, potentially encouraging the use of bicycles while reducing the use of passenger vehicles and demand on transportation fuel. Therefore, impacts related to Project operations would be less than significant.

The Project would consume energy during construction activities primarily from on- and off-road vehicle fuel consumption in the form of diesel, gasoline, and electricity from water conveyance for dust control. The Project's construction contractors would comply with applicable CARB regulations governing the accelerated retrofitting, repowering, or replacement of heavy duty diesel on- and off-road equipment. CARB adopted an Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling time in order to reduce public exposure to diesel particulate matter and other toxic air contaminants. CARB approved the Truck and Bus regulation to reduce NO<sub>X</sub>, PM10, and PM2.5 emissions from existing diesel vehicles operating in California. In addition to limiting exhaust from idling trucks, CARB recently promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower to reduce emissions by requiring the installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models.

While intended to reduce construction criteria pollutant emissions, compliance with the above listed anti-idling and emissions regulations would also result in efficient use of construction-related energy and the minimization or elimination of wasteful and unnecessary consumption of energy. According to the CARB staff report that was prepared at the time the anti-idling ATCM was being proposed for adoption in late 2004/early 2005, the regulation was estimated to reduce non-essential idling and associated emissions of diesel particulate matter and  $NO_X$  emissions by 64 and 78 percent respectively in analysis year 2009.

These reductions in emissions are directly attributable to overall reduced idling times and fuel combustion as a result of compliance with the regulation. Project compliance with CARB regulations would result in energy savings, assuming a fuel reduction equivalent to the percent reduction of diesel particulate matter or  $NO_X$  as estimated by CARB for 2009 (the lesser value, i.e., 64 percent, is used as a conservative assumption). Heavy-duty engines continue to become more efficient and reduction amounts may lessen in the future due to this. Although the energy

savings cannot be accurately quantified, the Project would still reduce consumption of diesel fuel under the anti-idling measure. Construction electricity use would be temporary, sporadic, and would cease upon completion of the Project. Electricity for water conveyance would only be used when necessary to prevent fugitive dust and would decrease after completion of excavation and paving phases when the site is paved and has less dust to control. Thus, construction of the Proposed Project would use energy necessary to build the Project, but would not result in the wasteful, inefficient, and unnecessary use of energy and impacts would be **less than significant**. No mitigation is required.

**Response to Impact Question b):** Construction of the Project would result in a temporary increase in demand for gasoline, diesel and electricity. The Project's energy consumption primarily would result from on- and off-road fuel use from construction related vehicles totally approximately 4,748 gallons of gasoline and 27,879 gallons of diesel. The Project would require electricity from water conveyance for dust control totally approximately 6.7 megawatt hours. Natural gas would not be used during Project construction. These activities make up small percentages of total energy supplies and would cease after the 1-year construction period. Thus, construction would not cause a permanent increase in demand and impacts would be **less than significant**. No mitigation is required.

<b>4.11 Geology and Soils</b> <i>Would the project:</i>	Potentially Significant 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:				<b>I</b>
<ul> <li>i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo</li> <li>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.</li> </ul>				
ii) Strong seismic ground shaking?			$\square$	
iii)Seismic-related ground failure, including liquefaction?			$\boxtimes$	
iv) Landslides?			$\square$	
b) Result in substantial soil erosion or the loss of topsoil?				
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?			$\boxtimes$	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or proper				
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal system 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?		$\boxtimes$		

**Response to Impact Question a-i):** Similar to all of southern California, the Project Site is in a known seismically active region where the potential of seismic hazards exists. According to the Preliminary Foundation Report for the Project (Appendix D), the Project Site is not located within an Alquist-Priolo Fault Zone, as defined by the California Geological Survey (CGS), and therefore fault rupture is considered low (Group Delta 2020). Further, the Project would not consist of the construction of any habitable structures that would be at risk for loss, injury, or death. As such, the Project would not directly or indirectly cause any substantial impacts due to rupture of a known earthquake fault, and there would be **no impact**. No mitigation is required.

**Response to Impact Question a-ii):** As discussed in Response 4.11a(i), there are no active or potentially active earthquake faults of major historic significance within the cities of Tustin or Orange. The Corona Fault is located over 5 miles east the Project Site, and the San Andreas Fault, the largest fault in southern California, is approximately 70 miles east of the Project Site (DOC 2020c). While the Project Site is located in a seismically active region and some risks related to seismic ground shaking would remain, compliance with applicable engineering seismic design standards, regulatory standards and recommendations provided in Appendix D would ensure that the Proposed Project would minimize risks during a seismic ground shaking event, including for the proposed retaining wall and backfill. Any impact of ground shaking would be reduced to a less than significant level through compliance with regulatory measures, such as Title 24 Building Standards and Caltrans Standard Specifications. As such, impacts related to seismic ground shaking would be **less than significant**. No mitigation is required.

**Response to Impact Question a-iii):** Liquefaction involves a sudden loss in strength of a saturated, cohesionless soil caused by the build-up of pore water pressure, such as produced by an earthquake, and where it occurs its effects can include vertical and lateral ground displacements, slope instability and lateral spreading, and ground failure. Typically, liquefaction occurs in areas where groundwater is less than about 60 feet from the surface and where the soils are composed predominantly of poorly consolidated fine sands, silty sands and non-plastic silts.

As stated in the Preliminary Foundation Report for the Project, the soils underlying the Project Site include Vaqueros and Sespe undifferentiated (Tvs), Topanga (Tt), young alluvial deposits (Qyf and Qya), and man-made artificial fill (Qaf). The Project Site is predominantly mapped as thick beds of sandstone, conglomerates and claystone of the early Tertiary Vaqueros and Sespe undifferentiated (Tvs) formation (Appendix E).

According to the California Department of Conservation (DOC) and the Preliminary Foundation Report, a portion of the Project Site is located within a liquefaction zone (DOC 2020). However, the liquefaction zones are associated with mapped young alluvial fan deposits that have been altered along the alignment due to mass grading from construction of Jamboree Road. The grading involved benching and keying into competent material and controlled backfill that was placed up to 100 feet thick over the potentially liquefiable soils.

Improvements along Pioneer Road would not result in any ground-disturbing activities in which would result in seismic-related ground failure, including from liquefaction. Ground-disturbing activities along Jamboree Road would include the relocation of utilities and construction of a new retaining wall. However, according to the Preliminary Foundation Report, the bedrock is generally shallow along the existing cut slopes, loose cohesionless soils were not encountered, and groundwater is deeper than 100 feet (Appendix D). Therefore, the Project would have a **less than significant** impact regarding liquefaction or unstable soils. No mitigation is required.

**Response to Impact Question a-iv):** The Project Site is not located within a landslide zone as identified by the California Department of Conservation (DOCb 2020). Further the Project Site,

is located within a developed area and the topography of the Project Site itself gently slopes south at a two to three percent gradient (Appendix D). The Project would include the construction of a retaining wall along the western side of Jamboree Road to facilitate space for the bikeway that would require cuts into native soft rock and man-made fill. Additionally, the existing retaining wall near the Santiago Aqueduct Commission/Metropolitan Water District of Southern California facilities would remain in place. According to the Preliminary Foundation Report's slope stability analyses, the engineered artificial fill slopes would not be impacted by the proposed retaining wall, as the change in mass would be minimal and no large cuts are proposed. All improvements would be in conformance with the Uniform Building Code, Caltrans specifications, and recommendations provided in Appendix E. As such, impacts regarding landslides would be **less than significant**. No mitigation is required.

**Response to Impact Question b):** Project improvements that would involve the exposure of topsoil include the demolition of the existing sidewalk along Jamboree Road, construction of a new retaining wall, and relocation of utilities. Construction activity would result in disturbance to soils that could expose them to potential erosive forces, such as wind and water. All earth-disturbing activities would be temporary, and erosion effects would depend largely on the characteristics of soils disturbed, the quantity of disturbance and the length of time soils are subject to conditions that would be affected by erosion processes. All construction activities would be required to comply with the Caltrans Standards Specifications and Chapter 70 of the CBC, which regulates grading activities, including drainage and erosion control.

As the Project Site is larger than one-acre in size, the Project would require compliance with the National Pollutant Discharge Elimination System (NPDES) Construction General Permit criteria, including the preparation of a Storm Water Pollution Prevention Program (SWPPP), which includes Best Management Practices (BMPs) to minimize soil erosion and runoff on site. BMPs typically include, but are not limited to, temporary ditches and swales, soil stabilization measures, and biotreatment BMPs.

Upon completion of construction, the Proposed Project would include similar ground materials as the current condition. Therefore, with implementation of the existing regulatory requirements, impacts related to erosion or loss of topsoil would be **less than significant**. No mitigation is required.

**Response to Impact Question c):** The Project Site generally slopes south and is located within a previously developed roadway. A retaining wall would be constructed to ensure slope stabilization adjacent to Peters Canyon Regional Park along Jamboree Road. Additionally, the existing retaining wall near the Santiago Aqueduct Commission/Metropolitan Water District of Southern California facilities would remain in place. As detailed in Responses 4.11a(iii) and 4.11(iv), the Project would result in a less than significant impact related to landslides and liquefaction. As detailed in the Preliminary Foundation Report, Project implementation would have a nominal effect on lateral spreading and settlement. Prior to commencement of grading operations, unsuitable material would be required to be removed in accordance with Caltrans specifications. Improvements would be in compliance with all federal, State, and local requirements, and would be required to comply with the recommendations listed in Appendix D. As such, with compliance with local seismic development requirements and design standards, the Project would result in **less than significant** impacts related to unstable soils. No mitigation is required.

**Response to Impact Question d):** Expansive soils are fine-grained soils (generally highplasticity clays) that can undergo a significant increase in volume with an increase in water content and a significant decrease in volume with a decrease in water content. Changes in the water content of an expansive soil can result in severe distress to structures constructed upon the soil. According to the Preliminary Foundation Report (Appendix D, moderately expansive soils are present at the Project Site. Per the recommendations within the Preliminary Foundation Report, prior to commencement of grading operations, debris, organic material and/or other unsuitable material would be removed and disposed of in accordance with Section 17-2 and 19-1 of Caltrans Standard Specifications (Caltrans 2018). Furthermore, all removals would be observed by a representative of the Geotechnical Engineer of Record, ensuring all exposed subgrade contains competent material. The recommendations included in the Preliminary Foundation Report also include general construction considerations, which would reduce the potential for expansions pressures to risk loss of life and/or property. As such, the Project would not create substantial risks of loss to life or property due to expansive soils, and impacts would be **less than significant**. No mitigation is required.

**Response to Impact Question e):** The Project consists of a roadway improvement project and would not include the use of any septic tanks or alternative waste systems. Therefore, there would be **no impact** associated with soils that are inadequate to support the use of alternative waste disposal systems. No mitigation is required.

**Response to Impact Question f):** According to the Paleontological Resources Assessment conducted for the Proposed Project (Appendix E), three of the five geologic units mapped within and immediately adjacent to the Project area have high paleontological sensitivity (Puente Formation [Tp], Undifferentiated Vaqueros and Sespe formations [Tvs], and Santiago Formation [Tsa]). In addition, the Young Alluvial Fan has low-to-high paleontological sensitivity increasing with depth. Given the Project area's potential to contain paleontological resources and location to previously identified paleontological resources, grading activities have the potential to encounter paleontological resources. Therefore, the Project would be required to implement Mitigation Measures MM-PAL-1 through MM-PAL-4, which would reduce potential impacts to unique paleontological resources or unique geological features to **less than significant**, should they be encountered during Project implementation.

#### **Mitigation Measures**

- **MM-PAL-1:** Prior to the start of construction activities, OCPW shall retain a Qualified Paleontologist that meets the standards of the Society for Vertebrate Paleontology (2010) to carry out all mitigation measures related to paleontological resources.
- **MM-PAL-2:** Prior to start of any ground disturbing activities, the qualified paleontologist shall conduct pre-construction worker paleontological resources sensitivity training. The Qualified Paleontologist shall contribute to any construction worker cultural resources sensitivity training either in person or via a training module. The training should include information on what types of paleontological resources could be encountered during excavations, what to do in case an unanticipated discovery is made by a worker, and laws protecting paleontological resources. All construction personnel shall be informed of the possibility of encountering fossils and instructed to immediately inform the construction foreman or supervisor if any bones or other potential fossils are unexpectedly unearthed in an area where a paleontological monitor is not present. OCPW shall ensure that construction personnel are made available for and attend the training and retain documentation demonstrating attendance.
- **MM-PAL-3:** Paleontological resources monitoring shall be performed by a qualified paleontological monitor (meeting the Society of Vertebrate Paleontology standards, 2010) working under the direction of the qualified paleontologist.

Paleontological resources monitoring shall be conducted for all ground disturbing activities of previously undisturbed sediments of the Puente, Santiago, Vaqueros, and Sespe formations, as well as all excavations exceeding 15 feet deep within Young Alluvial Fan deposits. The El Modelo Volcanics have low potential to contain paleontological resources and would not require monitoring. Monitoring shall consist of visually inspecting fresh exposures of rock for larger fossil remains and, where appropriate, collecting wet or dry screened standard sediment samples (up to 4.0 cubic yards) of promising horizons for smaller fossil remains (SVP, 2010). Per the Society for Vertebrate Paleontology standards (2010), once 50 percent of excavations or other ground disturbing activities are complete within geologic units assigned high paleontological sensitivity and no fossils are identified, monitoring can be reduced to part-time inspections or ceased entirely if determined adequate by the qualified paleontologist in consultation with OCPW. Monitoring activities shall be documented in a Paleontological Resources Monitoring Report to be prepared by the Qualified Paleontologist at the completion of construction and should be provided to OCPW within six (6) months of Project completion. If fossil resources are identified during monitoring, the report shall also be filed with the Natural History Museum of Los Angeles County.

**MM-PAL-4:** If a paleontological resource is discovered during construction, all Project-related ground disturbing activities within a 100-foot buffer around of the find shall be temporarily diverted to facilitate evaluation of the discovery and OCPW shall be immediately notified of the find. Work shall be allowed to continue outside of the buffer area. At the qualified paleontologist's discretion and to reduce any construction delay, the grading and excavation contractor should assist in removing rock samples for initial processing and evaluation of the find. All significant fossils shall be collected by the paleontological monitor and/or the qualified paleontologist. Collected fossils shall be prepared to the point of identification and catalogued before they are submitted to their final repository. Any fossils collected shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County, if such an institution agrees to accept the fossils. If no institution accepts the fossil collection, they should be donated to a local school in the area for educational purposes. Accompanying notes, maps, and photographs should also be filed at the repository and/or school.

<b>4.12 Greenhouse Gas</b> Emissions Would the project:	Potentially Significant 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 effect on the environment?				
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				

**Responses to Impact Questions a, b):** Gases that trap heat in the atmosphere are called greenhouse gases (GHGs). The major concern with GHGs is that increases in their concentrations are causing global climate change. Global climate change is a change in the average weather on Earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the rate of global climate change and the extent of the impacts attributable to human activities, most in the scientific community agree that there is a direct link between increased emissions of GHGs and long term global temperature increases.

The State of California defines GHGs as carbon dioxide ( $CO_2$ ), methane ( $CH_4$ ), nitrous oxide ( $N_2O$ ), sulfur hexafluoride (SF<sub>6</sub>), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). Because different GHGs have different global warming potentials (GWPs) and  $CO_2$  is the most common reference gas for climate change, GHG emissions are often quantified and reported as  $CO_2$  equivalents ( $CO_2e$ ). For example,  $CH_4$  has a GWP of 25 (over a 100-year period); therefore, 1 metric ton (MT) of  $CH_4$  is equivalent to 25 MT of  $CO_2$  equivalents ( $MTCO_2e$ ). The State uses the GWP ratios available from the United Nations Intergovernmental Panel on Climate Change (IPCC) and published in the *Fourth Assessment Report* (AR4). By applying the GWP ratios, Project-related  $CO_2e$  emissions can be tabulated in metric tons (MT) per year. Large emission sources are reported in million metric tons (MMT) of  $CO_2e$ .

Some of the potential effects of global warming in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more forest fires, and more drought years (CARB 2008). Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC 2001):

- Higher maximum temperatures and more hot days over nearly all land areas;
- Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
- Reduced diurnal temperature range over most land areas;
- Increase of heat index over land areas; and
- More intense precipitation events.

Also, there are many secondary effects that are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

California generated 429.4 MMTCO<sub>2</sub>e in 2016, the most recent year data are available. Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2016, accounting for approximately 39 percent of total GHG emissions in the state. This sector was followed by the industrial sector (21 percent) and the electric power sector (including both in-state and out-of-state sources) (16 percent).

Impacts of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and toxic air contaminants. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; however, it is clear that the quantity is enormous, and no single project would measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or micro climates. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

Neither the City of Orange nor the City of Tustin have adopted thresholds of significance for GHG emissions that would be applicable to this Project. CEQA Guidelines 15064.4 states that the lead agency has the discretion to rely on a qualitative analysis or performance based standards in determining the significance of a project's GHG emissions. Accordingly, the analysis herein examines the extent to which the Project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions, consistent with CEQA Guidelines 15064.4 (b)(3).

The Project consists of roadway improvements for the addition of a bikeway. Therefore, the Project would not result in the generation of operational emissions. The addition of proposed bike lanes would provide connectivity within the regional bikeway system, potentially encouraging the use of bicycles while reducing the use of passenger vehicles. The Project's highest GHG contributors are from off-road construction equipment sources. The proposed Project would utilize construction contractors who demonstrate compliance with applicable CARB regulations restricting the idling of heavy-duty diesel motor vehicles and governing the accelerated retrofitting, repowering, or replacement of heavy-duty diesel on- and off-road equipment. CARB has adopted an Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other toxic air contaminants.

CARB has also adopted emission standards for off-road diesel construction equipment of greater than 25 hp. The emissions standards are referred to as "tiers" with Tier 4 being the most stringent (i.e., less polluting). The requirements are phased in, with full implementation for large and medium fleets by 2023 and for small fleets by 2028.

Therefore, construction of the proposed Project would be consistent with applicable standards. As a result, impacts would be **less than significant**. No mitigation is required.

<b>4.13 Hazards and Hazardous Materials</b> <i>Would the project:</i>	Potentially Significant 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?			$\boxtimes$	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			$\boxtimes$	
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?				$\boxtimes$
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			$\boxtimes$	
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				

**Response to Impact Question a):** Project construction activities may involve the use and transport of hazardous materials. Materials may include fuels, oils, mechanical fluids, and other

chemicals used in equipment during construction. The use of such materials would be considered minimal and require specialized forms use, transport, and disposal. All hazardous materials would be used in compliance with federal, state, and local regulations, such as the Resource Conservation and Recovery Act (RCRA) and the Hazardous Materials Transportation Act (HMTA), which requires all hazardous materials to be disclosed, stored, transported, and disposed of in appropriate locations. Oversight by the appropriate federal, state, and local agencies and compliance with applicable regulations related to the handling, storage, and disposal of hazardous materials would avoid and minimize potential release of hazardous materials. As such, the Project would not create a significant hazard to the public through the routine use, transport, or disposal of hazardous materials. Impacts would be **less than significant**. No mitigation is required.

**Response to Impact Question b):** Construction activities would involve the excavation, grading, paving, and other ground-disturbing activities, and would likely require the transport, storage, use, and disposal of small amounts of hazardous materials including fuels, oils, paint, and other similar related materials in varying quantities during construction. The accidental release of these materials could potentially injure construction workers, contaminate soil, and/or affect habitats, surface water bodies, or groundwater. Impacts associated with potential hazardous material release, although likely localized and short-term, could potentially create a significant hazard to the public or the environment. However, the applicant would be required to comply with all relevant and applicable federal, state, and local laws and regulations that pertain to the transport, storage, use, and disposal of hazardous materials and waste during construction and operation of the Proposed Project. Furthermore, the applicant would be required to comply with a SWPPP that would implement BMPs to prevent all pollutants including any hazardous materials, from being inappropriately exposed on-site though contact with stormwater. As such, the potential for the Project to 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 would be **less than significant**. No mitigation is required.

**Response to Impact Question c):** There are three schools located within 0.5 mile of the Project Site. Pioneer Middle School, which is located at 2700 Pioneer Road, is located approximately 376 feet west of the southernmost Project boundary. Additionally, Peters Canyon Elementary Road, located at 26900 Peters Canyon Road, is adjacent to the Project Site, and Creator's Corner Pre-School is located less than 600 feet east of the Project Site, at 10200 Pioneer Road. As discussed above in Responses 4.13a and 4.13b, the Project would be required to comply with all federal, state, and local regulations regarding the use, storage, transport, and disposal of hazardous waste. In addition, the Proposed Project would be temporary in nature, and would not be classified as a large quantity user of hazardous materials or engage in potentially hazardous activities (e.g., bulk material storage or chemical processing, refining, etc.).

The re-striping of Pioneer Road would be limited to 21 days, and would only temporarily expose Pioneer Middle School and Peters Canyon Elementary School to hazardous materials. The potential to emit hazardous emissions or handle hazardous materials within one quarter mile of Creator's Corner Pre-School may remain for the duration of construction (12 months). However, due to the relatively short duration of these construction operations and compliance with federal, state, and local regulations, the potential to expose the nearby schools to unacceptable levels of risks of hazardous materials would be **less than significant**. No mitigation is required.

**Response to Impact Question d):** The Project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, including the California Department of Toxic Substances Control (DTSC) EnviroStor and State Water Resources Control Board GeoTracker databases (EnviroStor 2020). These lists contain reported hazardous materials

sites, include leaking underground storage tanks, solid waste disposal sites, or hazardous waste and substances sites. As such, **no impacts** would occur that would create a significant hazard to the public or the environment. No mitigation is required.

**Response to Impact Question e):** The Project is not located within 2 miles of a public airport or public use airport. John Wayne Airport (JWA), the nearest airport to the Project Site, is located at 18601 Airport Way in Santa Ana, and is 8 miles southwest. JWA is a commercial and general aviation airport that serves Orange County, and the Greater Los Angeles area (OCAir 2020). As such, the Project would not result in a safety hazard or excessive noise within 2 miles of an airport and there would be **no impact**. No mitigation is required.

**Response to Impact Question f):** According to the City of Orange Emergency Evacuation Maps, Jamboree Road is a major street that is a primary southern evacuation route out of the City of Orange (City of Orange 2020). The City of Tustin does not identify any specific evacuation routes, rather provide real-time information and specific procedures to guide City agencies in the case of an emergency evacuation (City of Tustin 2019). The City of Tustin would ensure that evacuation routes do not pass through hazard zones (City of Tustin 2019).

Project improvements along Jamboree Road would include demolition of existing sidewalks, replacement of utilities, and the construction of a Class II shared-use path along the western side. Construction of the Project would not require any road closures along either Jamboree Road or Pioneer Avenue. The Proposed Project does not propose to remove any lanes of vehicular travel, nor would the Project result in permanent roadway impairment. After full implementation of the Project, the ability of the roadway to function as an emergency route would remain the same. As such, the Project would not impair implementation of an adopted emergency response or evacuation plan and there would be a **less than significant** impact. No mitigation is required.

**Response to Impact Question g):** According to the California Department of Forestry and Fire Protection (CAL FIRE), the Project Site is located in a Very High Fire Hazard Severity Zone (VHFHSV) within a local responsibility area (CAL FIRE 2011). Several large wildland fire incidents have occurred within the Project vicinity (City of Tustin 2019; CAL FIRE 2020):

- The Paseo Grande Fire, which occurred in October 1967 burned 39,871 acres within Orange County;
- The Gypsum Fire, which occurred in 1982 and burned 19,985 acres in a smaller area within Peters Canyon Regional Park and adjacent vacant land;
- The Santiago Fire, which occurred in 2007 and burned over 517,000 acres (OCFA 2007);
- The Canyon Fire 2, which occurred in October 2017 and burned a total of 9,217 acres within Orange County in the communities of Anaheim Hills and Peters Canyon Regional Park;
- The Silverado Fire, which burned approximately 12,466 acres near Silverado Canyon in October 2020; and
- The Bond Fire which burned approximately 6,686 acres and near Loma Alta Ridge in December 2020.

Although the Project would be located within a VHFHSZ, the Project would be constructed in compliance with all applicable State and local fire codes. In addition, with implementation of the Proposed Project, the Project Site would continue to operate as a transportation corridor, similar to existing conditions and no structures are proposed. As such, the Project would not expose people or structures either directly or indirectly to wildland fires, and impacts would be **less than significant**. No mitigation is required.

4.14 Hydrology and Water Quality		Less than Significant		
Would the project:	Potentially Significant Impact	with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?				
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?				
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner, which would:				
i) result in substantial erosion or siltation on- or offsite?				
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?			$\boxtimes$	
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial sources of polluted runoff?				
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				

**Response to Question a):** The Project would include sidewalk improvements, relocation of utilities, bike lanes, and landscaping. As the Project Site is greater than an acre, the Project would require compliance with the NPDES Construction General Permit criteria, including the preparation of a SWPPP and associated BMPs. Construction BMPs, such as swales, bioretention

systems, and sand filters, would effectively control erosion, sedimentation, and other constructionrelated pollutants during construction. Operational BMPs could also be required that would prevent impacts to water quality in post-Project condition, including but not limited to catch basins, street sweeping, and storm drainage system stenciling and signage. The Project would also include landscaping improvements, which would prevent particulates, debris, and petroleum-based materials from being conveyed to the storm drain system. Compliance with federal, state, and local water quality standards, as well and the implementation of BMPs, would prevent impacts to water quality. As such, impacts related to the violation of water quality standards or waste discharge requirements would be **less than significant**. No mitigation is required.

**Response to Question b):** Orange County Municipal Water District (OCWD) provides potable water to the cities of Orange and Tustin, and thus to the Project Site for landscape irrigation. OCWD's water supply comes from groundwater pumped from the Coastal Plain of Orange County Groundwater Basin (Basin) and imported water provided by Metropolitan Water District (MWD). The OCWD's main source of water supply is currently domestic water (65 percent), primarily groundwater (MWDOC 2016).

The Proposed Project would require minimal amounts of water for dust control during construction. Assuming that water would be required for dust control during site preparation and grading activities, approximately 0.5 million gallons of water would be required<sup>2</sup>. All water required during construction of the Project would be supplied via water trucks from OCWD water supplies. As the Project Site would remain as a transportation corridor with associated landscaping, upon completion, the Proposed Project would not change the amount of water required for irrigation compared to existing conditions. In addition, the Proposed Project would not substantially interfere with groundwater recharge, as any infiltration changes would be considered negligible. As such, the Project would not substantially decrease groundwater supplies or groundwater recharged, and impacts would be **less than significant**. No mitigation is required.

**Response to Question c-i):** According to the Natural Environment Study (Appendix B), several unnamed drainages transect the Project Site via at least two underground culverts, however none are exposed in any areas where the Proposed Project may affect them. The current flow of stormwater runoff is to onsite existing storm drain facilities which ultimately flow to municipal storm drains. Any change to the existing drainage patterns would be related to stormwater flow across the Project Site. Construction of the Proposed Project would involve removal and relocation of sidewalks, utilities, excavation, grading, and stockpiling of materials. These activities and materials on-site would temporarily alter the ground surface, consequently altering drainage patterns. Altered drainage patterns have the potential to result in erosion or sedimentation on or offsite by redirecting or concentrating flows on-site. However, as discussed in Response 4.14a, OCPW would be required to prepare and implement an SWPPP that would include erosion and sediment control BMPs to minimize the potential for erosion and sedimentation to occur during construction. BMPs would include, but are not limited to, filtering runoff during construction, avoiding heavy grading and earthwork operations during the rainy season, and incorporating landscaping as early as possible.

In addition, prior to receiving grading and building permits, OCPW would be required adhere to the recommendations provided within the Preliminary Foundation Report, which requires recommendations for soil and backfill requirements, slope stabilization, and compliance Caltrans

<sup>&</sup>lt;sup>2</sup> See calculations in Appendix A

Standard Specifications (Appendix D). Therefore, impacts to drainage patterns and associated erosion or siltation during construction would be **less than significant**. No mitigation is required.

**Response to Question c-ii):** As previously discussed above, construction of the Proposed Project could temporarily alter the ground surface, consequently altering the drainage pattern. Altered drainage patterns have the potential to result in increased runoff, which could result in flooding on or offsite. However, as described above in Response 4.14c, the Proposed Project would be required to comply with the Construction General Permit and a SWPPP. BMPs would be implemented to minimize runoff at the Project Site, which in turn would minimize flooding. After the completion of construction, the ground surface across the Project Site would be similar to existing conditions. Drainage within the Project Site would continue to be serviced by the existing storm drain system, with drainage improvements made at the intersection of Jamboree Road and Canyon View Avenue. Therefore, impacts on the existing drainage pattern regarding runoff in a manner that would result in flooding on- or off-site would be **less than significant**. No mitigation is required.

**Response to Question c-iii):** See discussion under Response 4.14c(i) and (ii), above. Construction of the Proposed Project would not result in significant impacts on the existing drainage pattern due to implementation of the SWPPP and BMPs that would minimize flooding and runoff. In addition, the Project would adhere to required permit regulations under the Construction General Permit (CGP) for the storm drain culverts near the intersection of Jamboree Road and Canyon View Avenue. The Project would not modify any drainage culverts along Pioneer Avenue, and stormwater would continue to flow into the existing storm drains. Stormwater from the roadway would be conveyed through existing gutters to drainage inlets that go to the municipal stormwater system. Because the Project includes culvert improvements, the Project would not create or contribute to runoff water that would exceed the capacity of existing or planned drainage systems. Drainage for the Project Site would continue to be serviced by the existing storm drain system. Therefore, impacts related to runoff exceeding the drainage system capacity would be **less than significant**. No mitigation is required.

**Response to Question d):** The Project Site is located approximately 14 miles from the Pacific Ocean. According to the California Emergency Management Agency's Tsunami Inundation Map, the Project Site is not in an affected tsunami USGS Quadrangle (CEMA 2009).

The Project Site is located less than one quarter of a mile east of the Peters Canyon Dam, and approximately 1.7 miles west of the Santiago Dam. Peters Canyon Dam is an earth-filled structure, owned by Orange County, and has a capacity of 626 acre-feet, for maximum spillway elevation of 537 feet above mean sea level (MSL). Water stored varies from 200 acre-feet to 600 acre-feet depending on seasonal rain amounts. Santiago Creek Dam is an earth-fill structure with a 25,000 acre-feet capacity reservoir (Irvine Lake). The dam is jointly owned by the Orange County and the Serrano Water District (IRWD 2020). Local dam inundation maps (prepared in accordance with the California Water Code Section 6161) show the southern portion of the Project Site along Pioneer Way to have potential for flooding of ten feet or more in the event of a dam breach (MBI 2020). However, the Project would not include habitable structures. The Project would continue to serve as a transportation corridor, similar to existing conditions. As such, risks associated with pollutant release from seiche, tsunami, or flood hazards associated with implementation of the Project would be **less than significant**. No mitigation is required.

**Response to Question e):** As discussed above in Response 4.14b, the Project overlies the Orange County Groundwater Basin (Basin), which meets approximately 60 to 70 percent of water needs within OCWD (MWDOC 2015). Regulating the Basin is the Santa Ana Regional Water Quality Control Board (RWQCB), which establishes water quality standards to protect waters in the region through implementation of NPDES permits which include waste discharge

requirements and the control of point and non-point source pollutants. Under the Proposed Project, construction and operation would be required to conform with NPDES permits. Further, the Proposed Project would not involve the extraction or depletion of groundwater and would not conflict with a sustainable groundwater management plan. As such, the Project would not conflict with or obstruct the implementation of any water quality control plan or groundwater management plan, and impacts would be **less than significant**. No mitigation is required.

<b>4.15 Land Use and Planning</b> <i>Would the project:</i>	Potentially Significant 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 applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				

**Response to Question a):** The Proposed Project consists of bike lane, sidewalk, and landscaping improvements. Land uses surrounding the Project Site consist of residential homes, neighborhood parks, schools, and the Peters Canyon Regional Park. The Proposed Project would not result in any surrounding land use change. The Project Site would continue to facilitate transportation uses, which is consistent with the established community and its surroundings. Therefore, **no impact** would occur regarding the division of an established community. No mitigation is required.

**Response to Question b):** As discussed above in Response 4.15a, the Project would not result in any land use change. The Project would be consistent with the City of Tustin General Plan and City of Orange General Plan. in that the Project would provide similar roadway operations with increased multi-modal function within an identified transit corridor. Additionally, the Project is one of eleven corridor improvement projects identified within the Orange County Transportation Authority's OCTA OC Foothills Bikeways Strategy Plan (BSP) (2016). The Project would be consistent with the vision of the Cities' General Plans' and the County's BSP in that it would provide increased circulation to accommodate land uses and provide multi-modal improvements. The Project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. As such, the Project would not result in any impacts to land use or planning, and there would be **no impact**. No mitigation is required.

<b>4.16 Mineral Resources</b> <i>Would the project:</i>	Potentially Significant 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?				$\boxtimes$

**Response to Question a):** According to the Department of Conservation, the Project Site is classified as MRZ-3, which can be described as areas with undetermined mineral resource significance (Miller 1994). The Project Site is located within a suburban area within the cities of Tustin and Orange. The Project Site and surrounding land currently do not contain any mineral extraction activities, nor would the Project propose any use that would result in the loss of any known mineral resource. As the Project would result in a similar use to that of the existing condition, the Project would have **no impact** resulting in the loss of known mineral resources. No mitigation is required.

**Response to Question b):** As discussed above in Response 4.16a, the Project Site does not contain any known mineral resources, nor would the Project result in the loss of known mineral resources. According to the Resources Element of the City of Orange General Plan, the closest locally important mineral resource site is located along the Santiago Creek, which contains significant deposits of sand and gravel resources, and is located approximately one-mile north of the Project Site (City of Orange 2015). Further, the City of Tustin identifies the Mercury-Barite deposit at the former Red Hill Mine, approximately 1.2 miles from the Project Site as the only mineral resource within the Tustin Planning Area (City of Tustin 2018). The Project Site does not contain any mineral resources, nor is the Project Site identified as a mineral resource recovery site within a local land use plan. Therefore, the Project would have **no impact** regarding the loss of mineral resources. No mitigation is required.

<b>4.17 Noise</b> <i>Would the project result in:</i>	Potentially Significant 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?			$\boxtimes$	
b) Generation of excessive groundborne vibration or groundborne noise levels?			$\boxtimes$	
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				

**Response to Question a):** A project would have a significant effect on the environment related to noise if it would substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of the community in which it is located. The applicable noise standards governing the Project Site are detailed as follows.

#### **Existing Regulations**

Noise Element of General Plans

#### <u>City of Tustin</u>

The City's noise standard for exterior living areas is 65 dBA CNEL. The City prohibits new residential land uses within the 65 dBA CNEL contour from any noise sources, including highways and airports. The indoor noise standard is 45 dBA CNEL, which is consistent with the standard in the California Noise Insulation Standard. The City also enforces building sound transmission and indoor fresh air ventilation requirements specified in Chapter 35 of the Uniform Building Code.

#### City of Orange

City of Orange General Plan Noise Element established the land use compatibility noise exposure limits which are generally established as 65 dBA CNEL for a majority of land use designations throughout the City. Higher exterior noise levels are permitted for multiple-family housing and housing in mixed-use contexts than for single-family houses. This is because multiple-family complexes are generally located in transitional areas between single-family and commercial districts or in proximity to major arterials served by transit, and a more integrated mix of residential and commercial activity (accompanied by higher noise levels) is often desired in mixed-use areas close to transit routes. These standards establish maximum interior noise levels for new residential development, requiring that sufficient insulation be provided to reduce interior ambient noise levels to 45 dBA CNEL.

#### Noise Control Ordinance

#### <u>City of Tustin</u>

City of Tustin in its Municipal Code, Chapter 6, Noise Control, has the following regulations and exemption regarding construction activity and noise associated with it.

The erection, demolition, alteration, repair, excavation, grading, paving or construction of any building or site is prohibited between the hours of 6:00 p.m. and 7:00 a.m., Monday through Friday and 5:00 p.m. and 9:00 a.m. on Saturdays, and during all hours Sundays and city observed federal holidays. Trucks, vehicles and equipment that are making or are involved with material deliveries, loading or transfer of materials, equipment service, maintenance of any devices or appurtenances to any construction project in the City shall not be operated on or adjacent to said sites outside of the approved hours for construction activity.

Noise emissions from sources associated with the following activities are exempt from the provision of the City's Municipal Code noise ordinance requirements: construction, repair, remodeling, or grading of any real property between the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday and the hours of 9:00 a.m. and 5:00 p.m. on Saturdays, excluding city observed federal holidays, as shown below in **Table 9** and **Table 10**.

*Exterior Noise Standards*. The following noise standards, unless otherwise specifically indicated, shall apply to all property within a designated noise zone:

	-	
Noise Zone	Noise Level	Time period
1	55 dB(A)	7:00 a.m.—10:00 p.m.
	50 dB(A)	10:00 p.m.— 7:00 a.m.
2	60 dB(A)	any time
3	70 dB(A)	any time
4	55 dB(A)	any time
5	60 dB(A)	any time

 Table 9:
 Exterior Noise Standards

- (a) In the event the alleged offensive noise consists of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).
- (b) It shall be unlawful for any person at any location within the incorporated area of the City to create any noise, or to allow the creation of any noise on property owned, leased,

occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other property to exceed:

- 1. The noise standard for a cumulative period of more than thirty (30) minutes in any hour; or
- 2. The noise standard plus five (5) dB(A) for a cumulative period of more than fifteen (15) minutes in any hour; or
- 3. The noise standard plus ten (10) dB(A) for a cumulative period of more than five (5) minutes in any hour; or
- 4. The noise standard plus fifteen (15) dB(A) for a cumulative period of more than one (1) minute in any hour; or
- 5. The noise standard plus twenty (20) dB(A) for any period of time.
- (c) In the event the ambient noise level exceeds any of the first four (4) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

*Interior Noise Standards*. The following interior noise standards, unless otherwise specifically indicated, shall apply to all property within a designated noise zone:

Noise Zone	Noise Leve	el Time Period
1	55 dB(A)	7:00 a.m.—10:00 p.m.
	45 dB(A)	10:00 p.m.— 7:00 a.m.
5 (residential uses only)	55 dB(A)	7:00 a.m.—10:00 p.m.
	45 dB(A)	10:00 p.m.—7:00 a.m.

## Table 10: Interior Noise Standards

- (a) In the event the alleged offensive noise consists of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).
- (b) It shall be unlawful for any person at any location within the incorporated area of the city to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured within any other dwelling unit on any residential property or mixed use property, to exceed:
  - 1. The interior noise standard for a cumulative period of more than five (5) minutes in any hour; or
  - 2. The interior noise plus five (5) dB(A) for a cumulative period of more than one (1) minute in any hour; or
  - 3. The interior noise standard plus ten (10) dB(A) for any period of time.
  - 4. In the event the ambient noise level exceeds either of the first two (2) noise limit categories above, the cumulative period applicable to said category shall be increased

to reflect said ambient noise level. In the event the ambient noise level exceeds the third noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

#### City of Orange

City of Orange in its Municipal Code Chapter 8.24 Noise Control has the following regulations and exemption regarding construction activity and noise associated with it.

Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities take place between the hours of 7:00 a.m. and 8:00 p.m. on any day except for Sunday or a Federal holiday, or between the hours of 9:00 a.m. and 8:00 p.m. on Sunday or a Federal holiday. Noise generated outside of the hours specified are subject to the noise standards identified in **Table 11**:

A. The following noise standards for fixed noise sources, unless otherwise specifically indicated, shall apply to all residential property;

	Noise Level	Time Period
Hourly Average (Leq)	55 dB (A)	7:00 a.m.–10:00 p.m.
	50 dB (A)	10:00 p.m.–7:00 a.m.
Maximum Level	70 dB (A)	7:00 a.m.–10:00 p.m.
	65 dB (A)	10:00 p.m.–7:00 a.m.

 Table 11: Exterior Noise Standards

- B. It is unlawful for any person at any location within the City to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other residential property to exceed the noise standards identified in Table 9, above. For multi-family residential or mixed use developments located within the City's Urban Mixed Use, Neighborhood Mixed Use, Old Towne Mixed Use or Medium Density Residential General Plan land use districts, exterior noise standards shall apply to common recreation areas only and shall not apply to private exterior space (such as a private yard, patio, or balcony).
- C. In the event the ambient noise level exceeds the noise standards identified in Table 9 of this section, the "adjusted ambient noise level" shall be applied as the noise standard. In cases where the noise standard is adjusted due to a high ambient noise level, the noise standard shall not exceed the "adjusted ambient noise level," or 70 dB (A), whichever is less. In cases where the ambient noise level is already greater than 70 dB (A), the ambient noise level shall be applied as the noise standard.
- D. Each of the noise limits specified in Table 9 shall be reduced by 5 dB(A) for impact or simple tone noises, recurring impulsive noises, or for noises consisting of speech or music.

#### Sensitive Land Uses

The southern half of the Project Site is located primarily within a residential neighborhood, and is surrounded by single family homes to the east, west, and south. In addition, the southern portion of the Project Site is located adjacent to Pioneer Road Park, Cedar Grove Park, Pioneer Middle School, and Peter's Canyon Elementary School. The northern reaches of the Project Site are surrounded to the east and west by Peters Canyon Regional Park and open space. Residences, parks, and schools are considered noise-sensitive land uses.

## Construction

Project construction would involve the demolition and construction of sidewalks, relocation of utilities, and construction of bike lanes over a phased 12-month period. Project construction would generate noise from the daytime operation of construction equipment.

A list of the construction equipment that would be used during each phase of construction is provided in **Table 12**. The noise from construction equipment would generate both steady-state and episodic noise that could be heard within and adjacent to the Project Site. Construction noise levels fluctuate throughout a given workday as construction equipment move from one location to another within a project site. When construction equipment would be in use further away from a sensitive receptor location, construction noise levels would be lower than the calculated values provided herein, which assumes construction equipment would be in use nearest to a sensitive receptor location. Exposure to fluctuating construction noise levels that would at times be lower than the noise levels shown in the analysis below would not rise to the level (greater than 120 dBA) that would result in hearing loss or adverse health impacts.

<b>Construction Phase</b>	Equipment	No. of Pieces of Equip/ Utilization Factor
Demolition	Excavators Industrial/Concrete Saw Bulldozers	3/0.38 1/0.73 2/0.4
Site Preparation	Bulldozers Tractors/Loaders/Backhoes	3/0.4 4/0.37
Grading	Excavators Graders Bulldozers Tractors/Loaders/Backhoes	1/0.38 1/0.41 1/0.4 3/0.37
Building Construction – Utilities & Sidewalk	Crane Forklifts Generator Sets Tractors/Loaders/Backhoes Welders	1/0.29 3/0.2 1/0.74 3/0.37 1/0.45
Paving – Bikeway Construction	Cement and Motor Mixer Pavers Paving Equipment Rollers Tractors/Loaders/Backhoes	2/0.56 1/0.42 2/0.36 2/0.38 1/0.37

## Table 12: Construction Equipment

A summary of the construction phases and estimated pieces of equipment for the Proposed Project is shown above in Table 12, assuming one-year construction schedule with 259 working days.

Individual pieces of construction equipment that would be used for construction of the Project produce maximum noise levels of 74 dBA to 90 dBA at a reference distance of 50 feet from the noise source, as shown in **Table 13**. The construction equipment noise levels at 50 feet distance (Referenced Maximum Noise Levels) are based on the FHWA RCNM (Federal Highway Administration Roadway Construction Noise Model) User's Guide, which is a technical report containing actual measured noise data for construction equipment (FHWA 2006).

Type of Equipment	Acoustical Usage Factorª (%)	Reference Maximum Noise Levels at 50 Feet, <sup>a,b</sup> Lmax (dBA)
Backhoe	40	78
Cement and Mortar Mixer	50	80
Concrete Saw	20	90
Crane	16	81
Dozer	40	82
Excavator	40	81
Forklift	20	75
Generator	50	81
Grader	40	85
Front End Loader	40	79
Roller	20	80
Scraper	40	84
Tractor	40	80
Asphalt Paver	50	77
Welders	40	74

#### Table 13: Construction Equipment Noise Reference Levels and Usage Factors

NOTES:

<sup>a</sup> The usage factor is the percentage of time during a construction noise operation that a piece of construction is operating at full power.

<sup>b</sup> Construction equipment noise levels are based on the FHWA RCNM.

SOURCE: FHWA, Roadway Construction Noise Model User's Guide, 2006, Table 1.

These maximum noise levels would occur when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites often operates under less than full power conditions or part power. To more accurately characterize construction-period noise levels, the average (hourly Leq) noise level associated with each construction phase is calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction phase.<sup>3</sup> These noise levels are typically associated with multiple pieces of equipment operating simultaneously. **Table 14** lists the potential construction noise levels at 50 feet from the active construction sources, factoring in the number and type of construction equipment that would be in operation during the same period, and their individual utilization factors. A sample calculation is included in the footnote of the table that shows how the sound energy is combined into a logarithmic scale and summed up in the time period (Leq) during which the equipment operates.

Table 14 shows that during each construction phase, depending on the number of pieces of construction equipment and individual utilization factor, the noise level at a distance of 50 feet from an active construction area on the Project Site ranges from 83.2 to 86.8 dBA Leq. This scenario assumed that the equipment listed during each construction phase would be operating during the same period of time (with individual utilization factor included) and is located in close range that can be viewed as a point source from a distance of 50 feet. In reality, it is not practical to have all these pieces of equipment operating in a small area at the same time when considering the terrain variation. It is assumed this way to obtain the worst case possible noise exposure for receivers in the Project vicinity. If the equipment is spread out over the entire Project Site, even though some pieces of equipment may be closer to an adjacent receiver, other pieces of equipment would be located at a longer distance from the same receiver, and the overall combined noise level would not be greater than the one estimated using the worst case scenario.

There are residential uses surrounding the Project Site on both sides of the bikeway in the southern segment. These residences would be potentially exposed to relatively high noise levels during Project construction. Some of these off-site residences are as close as 50 feet from the Project boundary, and may be exposed to construction noise levels reaching 86.8 dBA Leq for a period of time during paving and construction phase.

Within the City of Tustin, the erection, demolition, alteration, repair, excavation, grading, paving or construction of any building or site is prohibited between the hours of 6:00 p.m. and 7:00 a.m., Monday through Friday and 5:00 p.m. and 9:00 a.m. on Saturdays and during all hours Sundays and city observed federal holidays. Noise emissions from sources associated with the following activities are exempt from the provision of the City's Municipal Code noise ordinance requirements: construction, repair, remodeling, or grading of any real property between the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday and the hours of 9:00 a.m. and 5:00 p.m. on Saturdays, excluding city observed federal holidays.

Within the City of Orange, noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities take place between the hours of 7:00 a.m. and 8:00 p.m. on any day except for Sunday or a Federal holiday, or between the hours of 9:00 a.m. and 8:00 p.m. on Sunday or a Federal holiday.

<sup>&</sup>lt;sup>3</sup> Pursuant to the FHWA *Roadway Construction Noise Model User's Guide*, 2005, the usage factor is the percentage of time during a construction noise operation that a piece of construction is operating at full power.

Construction Phase	Equipment (Lmax, at 50 feet)(No.) (UF)ª	Noise Level at 50 feet from Active Construction Area, dBA Leq
Demolition	Excavators (81 dBA) (3) (40)	86.8 <sup>b</sup>
	Industrial/Concrete Saw (90 dBA) (1) (20) Bulldozers (82 dBA) (2) (40)	
Site Preparation	Bulldozers (82 dBA) (3) (40)	85.0
	Tractors/Loaders/Backhoes (79 dBA) (4) (40)	
Grading	Excavators (81 dBA) (1) (40)	85.3
	Graders (85 dBA) (1) (40)	
	Bulldozers (82 dBA) (1) (40)	
	Tractors/Loaders/Backhoes (79 dBA) (3) (40)	
Building	Crane (81 dBA) (1) (16)	83.2
Construction – Utilities & Sidewalk	Forklifts (75 dBA) (3) (20)	
	Generator Sets (81 dBA) (1) (50)	
	Tractors/Loaders/Backhoes (79 dBA) (3) (40)	
	Welders (74 dBA) (1) (40)	
Paving – Bikeway Construction	Cement and Motor Mixer (80 dBA) (2) (50)	84.6
	Pavers (77 dBA) (1) (50)	
	Paving Equipment (77 dBA) (2) (50)	
	Rollers (83 dBA) (2) (20)	
	Tractors/Loaders/Backhoes (79 dBA) (1) (40)	
NOTES: <sup>a</sup> UF: Utilization fac <sup>b</sup> Leq = 10 Log [(10 <sup>8</sup> 8.679 = 86.8 dBA	tor. $[^{1} x 3 x 0.4 + 10^{8.2} x 2 x 0.4 + 10^{9.0} x 1 x 0.2] = 10 I$	.og [477862504] = 10 x

Table 14: Cons	struction Noise	e in Different H	Phases
----------------	-----------------	------------------	--------

SOURCE: ESA, 2020.

The Proposed Project would comply with the permitted construction hours as identified in the City of Tustin Municipal Code Chapter 6, Noise Control, and City of Orange Municipal Code Chapter 8.24, Noise Control. In addition, standard construction best practices would occur related to equipment noise, including, but not limited to, the following:

• Equipment would use available noise suppression devices and properly maintained mufflers. Construction noise would be reduced by using quiet or "new technology," equipment, particularly the quieting of exhaust noises by use of improved mufflers where feasible. All internal combustion engines used at the Project Site would be equipped with the type of muffler recommended by the vehicle manufacturer. In addition, all equipment

would be maintained in good mechanical condition so as to minimize noise created by faulty or poorly maintained engine, drive-train and other components.

- During all site preparation, grading and construction, contractors would minimize the staging of construction equipment and unnecessary idling of equipment in the vicinity of noise sensitive land uses.
- The equipment staging area would be situated so as to provide the greatest distance separation between construction-related noise sources and noise-sensitive receptors nearest the Project Site during all Project construction

Because construction of the Proposed Project would be temporary and short term, there would be **no impacts** related to significant construction noise. No mitigation is required.

#### Operation

Operation of the Proposed Project would not generate any substantial noise. They are similar to what the existing bikeway would generate and the ambient noise from traffic on Jamboree Road and Pioneer Road would be comparable to and provide masking effect to the bikeway noise. Long term operational noise impacts associated with the Proposed Project would be **less than significant**. No mitigation measures are required.

**Response to Question b):** The amount of construction and demolition required for the Proposed Project is not anticipated to generate excessive groundborne vibrations or noise levels. Additionally, this Project does not include pile driving activities, therefore, ground borne vibration is not expected to occur. Due to the temporary nature of construction activities, impacts in this regard are considered to be **less than significant**. No mitigation is required.

**Response to Question c):** The Project Site is located approximately 8 miles to the northeast of the John Wayne Airport (JWA) which is located at 18601 Airport Way in Santa Ana, 13 miles to the southeast of Fullerton Municipal Airport (4022 West Commonwealth Avenue, Fullerton, CA), and 14 miles to the east of the Los Alamitos Navy Airfield (11206 Lexington Drive, Los Alamitos, CA). The Project Site is not located within the 65 dBA CNEL impact zone of these airports. However, the Project Site is near the approach flight path of JWA as the jets turn from eastbound to southwest-bound and is exposed to intermittent aircraft overflight noise. The range of aircraft overflight noise levels would not exceed any noise standards and would be much lower than the levels considered hazardous for human health. Therefore, this impact is **less than significant**. No mitigation is required.
<b>4.18 Population and Housing</b> <i>Would the project:</i>	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				$\boxtimes$

**Response to Question a, b):** Implementation the Proposed Project would not directly induce population growth as no housing or new businesses are proposed. In addition, the Proposed Project would not add a new road or expand roadway capacity, and would not indirectly induce population growth. Construction of the Project would occur within a currently developed roadway, and would not require land acquisition of any residences or habitable structures. As such, the Project would not directly or indirectly induce population growth or result in the displacement of residents or housing, and there would be **no impact**. No mitigation is required.

<b>4.19 Public Services</b> <i>Would the project:</i>	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) 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:				
i) Fire protection				$\boxtimes$
ii) Police protection				$\square$
iii) Schools				$\boxtimes$
iv) Parks				$\square$
v) Other public facilities				$\boxtimes$

**Response to Question a-i):** The Project Site would continue to be served by both the Orange County Fire Authority (OCFA) (which serves the City of Tustin) and the City of Orange Fire Department (OFD) (County of Orange 2012; OFD 2020). The closest OCFA fire station to the Project Site is OCFA Fire Station No. 43, which is located directly south of the Project Site, at 11490 Pioneer Way in the City of Tustin. OCFA Fire Station No. 43 is equipped with one firetruck (Truck 43) (FireDepartment.net 2020). The nearest OFD Fire Station to the Project Site is Station No. 7, which is located at 8501 East Fort Road, less than a half mile of the northern border of the Site (OFD 2020). The Proposed Project would be constructed in accordance with local and State fire codes. In addition, emergency access would continue to be provided during construction of the Project. The Project would not induce substantial population growth, and thus demand for fire protection services would not increase. As such, **no impacts** would occur regarding the need for new or improved fire protection services. No mitigation is required.

**Response to Question a-ii):** Law enforcement and police protection are provided by both the Tustin Police Department and the City of Orange Police Department. The nearest City of Tustin police station to the Project Site is located approximately 3.5 miles southwest of the Project Site, at 300 Centennial Way (Tustin PD 2020). The closest City of Orange police station to the Project Site is located at 1107 North Batavia Street, approximately 10.4 miles northeast (Orange 2020). The Proposed Project would not induce substantial population growth, and thus demand for police protection services would not increase. Additionally, the Project would not include any road closures in which may interfere with emergency access on local roadways. Emergency access would continue to be maintained. As such, **no impact** would occur related to police protection services as a result of the Proposed Project. No mitigation is required.

**Response to Question a-iii):** As discussed above in Response 4.13c, there are three schools located near Project Site, which include the Pioneer Middle School, located approximately 376 feet west of the southernmost Project boundary at 2700 Pioneer Road, Peter's Canyon Elementary School, located at 26900 Peters Canyon Rd, less than 100 feet from the Project limits, and Creator's Corner Pre-School, which is located less than 600 feet southeast of the Project Site at 10200 Pioneer Road. The Project would not result in the addition of any residential housing or employment facilities that would increase the number of school-age children. Therefore, the Project would not result in an adverse physical impact which would result in the need for new or expanded schools, and there would be **no impact**. No mitigation is required.

**Response to Question a-iv):** Peters Canyon Regional Park, which is located directly west of the Project Site along Jamboree Road, encompasses 340 acres and offers a variety of trails providing opportunities for hikers, mountain bikers, and equestrians (OCParks 2020). The Project Site is also located directly adjacent to Pioneer Road Park and Cedar Grove Park, which include playgrounds, basketball courts, picnic areas and other amenities (Tustin Parks 2020). While implementation of the Project includes pedestrian and bicycle improvements that could improve connectivity to nearby parks, making the use of park facilities more desirable, the Project is intended to serve the surrounding local neighborhood, which is reflective of the scale of the Project, and is not anticipated to draw a substantial number of new park users to local parks near the Project Site from outside of the community. Moreover, the project does not have the potential to induce population growth, either directly or indirectly, and as such would not require additional parkland or parks be provided in the community.

Additionally, the Project would include construction within the right-of-way of Peters Canyon Regional Park to accommodate construction of the shared-use bike path along Jamboree Road. However, most of the right-of-way that would be acquired is located on a slope easement and would not affect the recreational usage of Peters Canyon Regional Park. As such, the Project would not require any new or expanded park facilities, and **no impact** would occur. No mitigation is required.

**Response to Question a-v):** Other public facilities would not be affected by the Project, as the Project would not directly or indirectly induce population growth. The Project would increase general circulation and bike access throughout the Project area; therefore, the Project would have **no impact** associated with the provision of new or expanded public facilities. No mitigation is required.

<b>4.20 Recreation</b> <i>Would the project:</i>	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				
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?				

**Response to Question a):** Peters Canyon Regional Park, Cedar Grove Park, and Pioneer Road Park are located directly adjacent to the Project Site. The Project would improve connectivity and is expected to encourage recreational bicyclists to use the bike path to obtain access to recreational facilities within the Project vicinity. As stated in Response 4.19(a-iv), an increase in use of parks may occur as a result of the Project, however, the Project is intended to serve the surrounding local neighborhood, and is not anticipated to draw a substantial number of new park users to local parks near the Project Site from outside of the community.

Additionally, the Project would include construction within the right-of-way of Peters Canyon Regional Park to accommodate construction of the shared-use bike path along Jamboree Road. However, most of the right-of-way that would be acquired is located on a slope easement and would not affect the recreational usage of Peters Canyon Regional Park. Therefore, the Proposed Project would not result in a substantial physical deterioration of existing parks or recreational facilities and impacts would be **less than significant**. No mitigation is required.

**Response to Question b):** While the Project includes bicycle facilities and related components such facilities are intended to increase bicycle transportation, connectivity, and safety. Although the Project is considered an expansion of transportation infrastructure, the bicycle roadway improvements and bike path would also be used for recreational purposes. While the Proposed Project would introduce a new recreational facility in the area, the project would be served by the existing community, and is not anticipated to result in any induced population growth. Additionally, the Project is one of eleven corridor improvement projects identified within the Orange County Transportation Authority's OCTA OC Foothills BSP (2016). The Proposed Project's construction and operational impacts have been considered throughout the discussion of environmental impacts in this document. Therefore, with implementation of the mitigation measures listed in this document, the Proposed Project would have a **less than significant** physical effect on the environment. No mitigation is required.

<b>4.21 Transportation</b> <i>Would the project:</i>	Potentially Significant 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?				
b) Would the project conflict or be inconsistent with CEQA section 15064.3, subdivision (b)?			$\boxtimes$	
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				
d) Result in inadequate emergency access?				

**Response to Impact Question a):** The Project Site extends along Jamboree Road and Pioneer Road, with the northern extent located at the intersection of Jamboree Road and Canyon View Avenue (located in the City of Orange) to the southern extent at the intersection of Pioneer Road and Pioneer Way (located in the City of Tustin). Regional access to the Project Site is provided by SR-261, and SR-241, which are tolled facilities operated by the Foothill/Eastern Transportation Corridor Agency. SR-261 runs parallel to Jamboree Road directly to the east of the Project Site, while SR-241 is located approximately 0.5 miles to the east of the Project Site. Local access is provided by Canyon View Avenue to the north, Tustin Ranch Road to the south, Jamboree Road to the east, and Newport Avenue to the west.

Construction is expected to occur between 7:00 a.m. and 8:00 p.m., Monday through Friday, and would comply with the Orange County Codified Ordinance Division 6 (Noise Control) limits regarding construction activity. No nighttime construction would occur. Construction of Proposed Project is scheduled to begin in 2023 and would last approximately 12 months. Based on assumptions developed for the Air Quality analysis (see Chapter 4.8), construction of the Proposed Project would generate a maximum of 73 round-trip construction worker trips and 29 round-trip vendor truck trips. This peak would occur during the utility and sidewalk construction phase over the course of approximately 86 work days.

## Local Roadways

During the construction period, construction vehicles would use the roadways that surround the Project Site to deliver materials and haul waste. Workers' vehicles and construction vehicles could access the site from the above-mentioned local streets. Roadway users could experience temporary delays from material deliveries, but these delays would be both brief and infrequent. Therefore, they would not affect overall traffic circulation in the Project vicinity. Construction staging would occur on-site and would not affect traffic operations on adjacent roadways.

Construction activities would not impede non-motorized travel or public transportation in the Project vicinity. The Proposed Project could, however, require temporary sidewalk closures while the existing sidewalk on the west side of Jamboree Road is demolished and replaced. However, any delays would be temporary and not considered to be significant. Temporary traffic control during construction shall be implemented in accordance with encroachment and construction permits from the cities of Tustin and Orange, and shall meet the requirements of the California Manual on Uniform Traffic Control Devices (Caltrans 2014).

As proposed, Project modernization would not conflict with any applicable plans, ordinances, or policies establishing measures for effectiveness of the performance of the circulation system, such as the Tustin General Plan, Orange General Plan, and East Tustin Specific Plan, in that the Project would provide similar roadway operations with increased multi-modal function within an identified transit corridor. Since the Proposed Project would construct new bicycle facilities and would not generate any new vehicle trips, a traffic impact analysis is not warranted. Therefore, the Proposed Project would not substantially degrade traffic operations or roadways in the Project vicinity, nor would it impede non-motorized travel or public transportation. As such, impacts would be **less than significant**. No mitigation is required.

### **Congestion Management Program Facilities**

The Orange County Transportation Authority (OCTA) is the County's Congestion Management Agency, covering 34 cities (including for the cities of Tustin and Orange) and unincorporated areas of Orange County. OCTA is responsible for developing the Orange County Congestion Management Program (CMP). The goals of Orange County's CMP are to support regional mobility objectives by reducing traffic congestion, to provide a mechanism for coordinating land use and development decisions that support the regional economy, and to support gas tax funding eligibility. To meet these goals, the CMP contains a number of policies designed to monitor and address system performance issues. OCTA developed the policies that makeup Orange County's CMP in coordination with local jurisdictions, Caltrans, and the South Coast Air Quality Management District (SCAQMD).

The CMP requires that a traffic impact analysis be conducted for any project generating 2,400 or more daily trips, or 1,600 or more daily trips for projects that directly access the CMP Highway System. Since the Proposed Project is would construct new bicycle facilities and would not generate any new vehicle trips, a CMP analysis is not required and the impact to CMP facilities would be **less than significant**. No mitigation is required.

### Transit, Bicycle, and Pedestrian Facilities

Public transportation in the cities of Orange and Tustin is provided by Metrolink train service and OCTA bus service. Neither Metrolink nor OCTA operate any bus or train lines near the Project Site.

Class II bicycle facilities (bike lanes) are provided in both travel directions on Jamboree Road and Pioneer Road. The Proposed Project would upgrade the Jamboree Road bicycle facility on the west side of the roadway to a Class I shared-use path, and would upgrade the Pioneer Road bicycle facilities to buffered (striped) Class II bike lanes on both sides of the roadway. The proposed offstreet paved Class I shared-use path would begin on the west side of Jamboree Road from Canyon View Avenue to Pioneer Road, then a buffered (striped) Class II bike lane would continue along both sides of Pioneer Road from Jamboree Road to Pioneer Way. These proposed upgrades to the bicycle network are consistent with OCTA's Commuter Bikeways Strategic Plan (CBSP), adopted on May 22, 2009, to encourage the enhancement of Orange County's regional bikeways network, in order to make bicycle commuting a more viable and attractive travel option. Sidewalks are provided on the west side of Jamboree Road and on both sides of Pioneer Road.

The Proposed Project would not directly or indirectly eliminate alternative transportation corridors or facilities (e.g., bus stops). In addition, the Proposed Project would not preclude increased alternative transportation services. Therefore, the Proposed Project would not conflict with adopted policies, plans, or programs supporting alternative transportation. As mentioned above, the Proposed Project would not impede non-motorized travel or public transportation in the Project vicinity; it would not decrease the performance or safety of such facilities. As a result, impacts would be **less than significant**. No mitigation is required.

**Response to Impact Question b):** Approved in 2013, Senate Bill (SB) 743 amended the CEQA Guidelines to provide an alternative to level of service (LOS) for evaluating transportation impacts. In accordance with Senate Bill (SB) 743, the new CEQA Guidelines Section 15064.3, subdivision (b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines criteria for determining the significance of transportation impacts are primarily focused on projects within transit priority areas and shift the focus from automobile delay to reduction of greenhouse gas emissions, creation of multimodal networks, and promotion of a mix of land uses. Automobile delay, as measured by LOS and other similar metrics, generally no longer constitutes a significant environmental effect under CEQA. The Governor's Office of Planning and Research (OPR) has proposed changes to the CEQA Guidelines that identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts. VMT is a measure of the total number of miles driven to or from a development and is sometimes expressed as an average per trip or per person.

Section 15064.3, subdivision (b) states that transportation projects that reduce, or have no impact on, vehicle miles traveled (VMT) should be presumed to cause a less-than-significant transportation impact. The County of Orange Board of Supervisors adopted County VMT guidelines at its November 17, 2020 meeting. The County VMT guidelines includes the following language, which is consistent with Section 15064.3, subdivision (b) (County of Orange 2020):

"... transit and active transportation projects generally reduce VMT and are, therefore, presumed to cause a less than significant impact on transportation. This presumption may apply to all passenger rail projects, bus and bus rapidtransit projects, and bicycle and pedestrian infrastructure projects."

Since the Proposed Project is an active transportation project that would not generate any new vehicle trips, there would be no increase in VMT. Therefore, impacts would be **less than significant**. No mitigation is required.

**Response to Impact Question c):** An impact would occur if the Project substantially increases roadway hazards due to a geometric design feature or the introduction of incompatible uses (i.e., farming equipment). The Proposed Project would not include any alterations of existing roadway features (e.g., road realignment) or introduce any new driveways that would create hazardous conditions. On the contrary, the Proposed Project would improve existing on-street bicycle facilities on Jamboree Road and on Pioneer Road to provide visual and/or physical barriers separating bicyclists from vehicular traffic, thereby reducing hazards for bicyclists and vehicles. These bicycle facility improvements would be constructed without requiring any changes to vehicle travel lanes (i.e., number of lanes, lane widths, turn restrictions) that could affect hazardous conditions for drivers. Therefore, impacts would be **less than significant**. No mitigation is required.

**Response to Impact Question d):** A significant impact would occur if the design of the Proposed Project would not satisfy local emergency access requirements. The Proposed Project would not include any alterations of existing roadway features (e.g., road realignment) that would create a permanent change to access for emergency vehicles. During construction of the Project, heavy construction-related vehicles could interfere with emergency response (e.g., slowing vehicles traveling behind trucks) on Project Site roadways where new bicycle facilities are being constructed. However, such delays would be infrequent and brief (drivers are required to pull over to allow an emergency vehicle on-call to pass), and contract specifications for the Proposed Project would ensure that emergency access would not occur as a result of Project construction or operation, and impacts would be **less than significant**. No mitigation is required.

<b>4.22 Tribal Cultural Resources</b> 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	Potentially	Less than Significant with	Less than	
value to a California Native American tribe, and that is:	Significant Impact	Mitigation Incorporated	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).				$\boxtimes$
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.				

### Discussion

This section provides an assessment of potential impacts to tribal cultural resources that could result from the Project. The analysis in this section is based on the results of consultation with California Native American Tribes conducted by OCPW for the Project, as required by the California Environmental Quality Act (CEQA) as recently amended by Assembly Bill 52 (AB 52). Native American consultation materials are provided in Appendix C of this Draft Initial Study/Mitigated Negative Declaration (IS/MND).

On October 1, 2020, Orange County Department of Public Works (OCPW) sent project notification letters to the following Native American tribes, which had previously submitted general consultation request letters pursuant to 21080.3.1(d) of the Public Resources Code:

- San Gabriel Band of Mission Indians
- Gabrieleño Band of Mission Indians Kizh Nation
- Juaneño Band of Mission Indians
- Soboba Band of Luiseño Indians

Each recipient was provided a brief description of the Project and its location, the lead agency contact information, and a notification that the tribe has 30 days to request consultation. The 30-day response period concluded on October 31, 2020.

No responses were received from any of the contacted California Native American tribes.

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

As a result of OCPW's AB 52 Native American consultation efforts, no tribal responses have been received regarding the Proposed Project and no tribal cultural resources have been identified. Therefore, the Proposed Project would not result in a substantial adverse change in the significance of a tribal cultural resource listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources. Nor will the Proposed Project result in substantial adverse change in the significance of a tribal cultural resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant. As such, **no impacts** to tribal cultural resources are anticipated and no mitigation is required.

<b>4.23 Utilities and Service</b> <b>Systems</b> <i>Would the project:</i>	Potentially Significant 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?				
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?				
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			$\boxtimes$	

**Response to Question a):** The Project would include bikeway and pedestrian improvements, relocation of utilities, and landscaping improvements. The Project Site would remain as a transportation corridor, similar to existing conditions. The Project would not generate sanitary sewer flows, and would utilize only minor amounts of water for construction and landscaping adjacent to the roadway. The Proposed Project would be required to comply with all provisions of the NPDES program, which ensures that the Proposed Project would not exceed applicable stormwater treatment requirements. The Proposed Project may result in the relocation of utilities, such as water meters and fire hydrants, however, such relocations are minor in scope and

considered routine. Therefore, impacts regarding the relocation or construction of new or expanded utilities would be **less than significant**. No mitigation is required.

**Response to Question b):** The Municipal Water District of Orange County (OCWD) serves more than 2.3 million residents in a 600-square-mile service area, including the cities of Tustin and Orange. As detailed in Response 4.14, OCWD's water supply is provided by groundwater pumped from the Orange County Groundwater Basin and imported water from MWD. Project activities that would require the use of water include use for dust control and irrigation. Project construction would not be anticipated to use substantial amounts of water which would affect water supplies for normal, dry, or multiple dry years. After construction of the expanded bikeway, the Project would operate with similar conditions to the existing roadway. As such, impacts regarding water supply would be **less than significant**. No mitigation is required.

**Response to Question c):** The Proposed Project would not result in the construction of new or expanded wastewater treatment facilities because no wastewater would be generated. The Proposed Project is a multi-modal transportation project that would not generate sanitary sewer flows. As such, **no impact** would occur related to a determination by the wastewater treatment provider that it has adequate capacity to serve the Project. No mitigation is required.

**Response to Question d):** Construction of the Proposed Project would be required to comply with existing federal, state, and local management and reduction statues related to solid waste. Solid waste generated by the Proposed Project would primarily be construction-related, and would be subject to the California Green Building Standards Code (CGBSC), which requires 65 percent waste generated during demolition and construction be diverted through reuse, recycling, and/or composting. Prior to the issuance of any permit, the Project would be required to submit a Waste Reduction and Recycling Plan (WRRP) demonstrating compliance with the CGBSC within the City of Tustin (City of Tustin 2020). The Project would also be required to demonstrate similar compliance with the City of Orange, which requires reporting of compliance with the CGBSC's 65 percent waste diversion requirements. All construction contractors would be required to provide information on where building materials will be taken and the percentage to be diverted from the landfill (City of Orange 2020). Any remaining solid waste would be transferred to the nearest landfill, which is the Frank R. Bowerman Landfill, located approximately 5 miles from the Project Site, at 11002 Bee Canyon Access Road, in the City of Irvine. The Landfills' remaining capacity is 205 million cubic yards, and would have the capacity to accommodate any construction or demolition debris produced by the Project (CalRecycle 2020). In compliance with State, federal, and local regulations, materials would be recycled or composed to the extent possible. As such, the Project would not generate solid waste in excess of any solid waste providers' capacity, and impacts would be less than significant. No mitigation is required.

**Response to Question e):** As discussed in Response 4.23d, the Project would be required to divert at least 65 percent of all construction and demolition waste (City of Tustin 2020; City of Orange 2020). Additionally, operation of the Project would generate no solid waste. All solid waste generated from the Project would comply with all federal, State, and, and local regulations. As such, impacts would be **less than significant**. No mitigation is required.

<b>4.24 Wildfire</b> <i>If located in or near state</i> <i>responsibility areas or lands</i> <i>classified as very high fire hazard</i> <i>severity zones, would the project:</i>	Potentially Significant 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?				

**Response to Question a):** The Project Site is located in a Very High Fire Hazard Severity Zone (VHFHSV) within a local responsibility area (CAL FIRE 2011). As detailed in Response 4.13g, three large wildland fire incidents have occurred within the Project vicinity. Although the Project would be located in a VHFHSZ, the Project would be constructed in compliance with all applicable State and local fire codes. As discussed above in Response 4.19a-i, the Project Site would be served by both the Orange County Fire Authority (OCFA) (which serves the City of Tustin) and the City of Orange Fire Department (OFD) (County of Orange 2012; OFD 2020). The Project would be required to submit a Plan Review to both the OCFA and the OFD for compliance with site development and fire department access, water requirements, and codes and standards for mitigation of fire hazards (Orange FD 2020; OCFA 2020b). Further emergency access would continue to be maintained, as the Project would not require the closure of any roads. The Proposed Project would not remove any lanes of vehicular travel, nor would the Project result in permanent roadway impairment. As a result, the ability of the roadway to function as an emergency route would remain the same. As such, the Project would not impair implementation of an adopted emergency response or evacuation plan and Project-related impacts would be less than **significant**. No mitigation is required.

**Response to Question b):** Although the Project would be located in a VHFHSZ, the Project Site is located in a currently developed area and would be constructed in compliance with all applicable State and local fire codes. The Project Site currently functions as a transportation corridor, and would continue to be a transportation corridor under implementation of the Project. The Project Site does not include habitable structures, and the Project would not introduce components or materials that would exacerbate wildfire risk. While the Project would include landscaping improvements, the Project would be replacing landscaping that already exists on the Project Site. As such, the Project would not exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from wildfires; impacts would be **less than significant**. No mitigation is required,

**Response to Question c):** The Proposed Project is located within a previously developed roadway. Implementation of the Project would require the relocation of utilities such as water meters, high voltage electrical cabinets, pull boxes, valve boxes, irrigation systems, concrete V-ditches, fire hydrants, catch basins, and mature trees along the west side of Jamboree Road. All proposed utility replacements would be relocated within the existing parkway space, and would be connected to existing utility lines. Upon permitting and inspection of the relocated utilities, it is anticipated that they would be regularly maintained by the Orange County Department of Public Works, and the cities of Orange and Tustin. As such, the Project would not require the installation or maintenance of infrastructure that may exacerbate fire risks or result in impacts to the environment, and impacts would be **less than significant**. No mitigation is required.

**Response to Question d):** As discussed above in Responses 4.11a(iv), the Project Site is not located within a landslide zone, and the Project would construct a retaining wall that would assist with slope stabilization (DOCb 2020). Although the Project is located within a VHFHZ, the Site is currently developed as an existing roadway, and improvements would largely be within the footprint of developed and disturbed land. As a roadway improvement Project, the Project would not expose people or structures to significant fire risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes; impacts would be **less than significant**. No mitigation is required.

<b>4.25 Mandatory Findings of Significance</b> Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?				
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?				

**Response to Question a):** On the basis of the foregoing analysis, the Proposed Project does not have the potential to significantly degrade the quality of the environment. The Project Site contains limited habitat for wildlife species that would be affected by the Project and is located in an urbanized setting. The Proposed Project consists of improvements to Jamboree Road and Pioneer Way, which is compatible with the surrounding land uses. The Project would not impact any biological resources with incorporation of **Mitigation Measures MM-BIO-1 through MM-BIO-5**. No historic or cultural resources that may contribute to California's history were observed at the Project Site. **Mitigation Measures MM-CUL-1 through MM-CUL-5** would reduce impacts to **less than significant** in the event that a cultural or historical resource was found. **Response to Question b):** Based on the analysis contained within this Initial Study, the Proposed Project would not have cumulatively considerable impacts with implementation of Project Mitigation Measures. Implementation of Mitigation Measures would reduce the potential for the incremental effects of the Proposed Project to **less than significant** levels when viewed in connection with the effects of past projects, current projects, or probable future projects.

**Response to Question c):** There are no known substantial adverse effects on human beings that would be caused by the Proposed Project. Implementation of Mitigation would reduce potential human safety impacts to **less than significant**. The Project is consistent with the land uses in the Project area and the environmental evaluation has concluded that no adverse significant environmental impacts would result from the Project.

# Chapter 5: Summary of Mitigation Measures and Project Design Features

Table 15 describes the mitigation measures and project design features for the proposed project.

Air Quality Project Des	ign Features
SCAQMD 2016 AQMP	PDF-ONRD-04: Accelerated Retirement of Older On-Road Heavy- Duty Vehicles
	PDF-OFFRD-01: Extension of the SOON Provision for Construction/Industrial Equipment
SCAQMD Rule 403	PDF: Fugitive Dust Control
SCAQMD Rule 1303	PDF: New Source Review Requirements
<b>Biological Resources</b>	
MM-BIO-1	The limits of construction activities and staging for the project within or adjacent to Peters Canyon Regional Park shall be clearly marked with staking and flagging. Staking and flagging shall be checked and confirmed by OCPW or its biological monitor and no activity will be permitted beyond designated work areas without written authorization from OCPW including a record drawing identifying the revised limit
MM-BIO-2	In order to obtain coverage under the Stateside General Permit for Discharges of Storm Water Associated with Construction Activity (Order 2009-0009-DWQ), the County must submit a Notice of Intent (NOI) and a Stormwater Pollution Prevention Plan (SWPPP) to the Regional Board in accordance with current procedures. Prior to the start of construction, a SWPPP will be prepared and a copy maintained on site during construction. The SWPPP will outline refueling locations, emergency response equipment and procedures for clean ups, and will include measures to control surface runoff and erosion, and will establish reporting requirements.
MM-BIO-3	Standard dust control measures such as watering and stabilization of soils will be implemented as appropriate to reduce fugitive dust during any pavement or ground disturbing activities. Best available control measures (BACMs) are prescribed and discussed in Table 1 of the SCAQMD Rule 403, available for reference here: https://www.aqmd.gov/docs/default-source/rule-book/rule- iv/rule-403.pdf?sfvrsn=4
MM-BIO-4	Impacts to nesting birds can be avoided by conducting project activities involving clearing and grubbing, grading, and/or construction using heavy equipment during the non-breeding season which extends from September 15 to February 15 for most species, and from July 1 to January 15 for raptors (birds of prey – e.g., owls, hawks, falcons, etc.). If clearing and grubbing or

# Table 15: Summary of Mitigation Measures and Project Design Features

construction cannot avoid the nesting season, the following measures would be implemented:

- a. If project activities may not be constrained to the non-breeding season, a Nesting Bird Management Plan (NBMP) is recommended to be developed and submitted to CDFW prior to construction, with a request for agency concurrence with proposed nest protection measures and construction area buffers for different avian species. The NBMP will include specifications consistent with measures b and c, below, to avoid impacts to nesting birds during construction activity.
- b. Prior to work during the avian nesting season (February 15 to September 15, or January 15 to July 1 for raptors), a qualified biologist will conduct a pre-construction survey of all suitable habitat for the presence of nesting birds within 500 feet of project construction activities on the west side of Jamboree Road. The nesting survey will be conducted not more than 7 days prior to vegetation removal or construction activities. If vegetation removal or construction activities are delayed for more than 7 days after the survey, a new pre-construction nesting bird survey will be required.
- c. If active nests are identified during the pre-construction survey, an appropriate buffer (e.g., as prescribed in the NBMP) shall be established that restricts or prohibits construction activities until the nest is inactive. Buffers for least Bell's vireo will not be less than 500' unless reduced buffers are approved by USFWS and CDFW for this species. However, the NBMP may prescribe smaller buffers for other birds based on tolerances of different species and site-specific conditions. Buffers may be refined by a qualified biological monitor based on field observations of individual bird behavior.
- d. A qualified biologist will delineate and flag buffer limits for construction avoidance until the nesting cycle is complete (i.e., nestling have fledged or the nest has failed). The qualified biologist may also recommend other measures to minimize disturbances to the nest, which may include, but are not limited to, full-time monitoring, work allowed only during limited time periods, restricting use of particular equipment, placement of sound barriers or visual barriers (e.g., noise blankets, straw bales).

MM-BIO-5	OCPW shall require preparation of a revegetation plan by a qualified restoration specialist to establish appropriate native vegetation throughout all areas temporarily disturbed by the Peters Canyon Bikeway Extension Project within Peters Canyon Park, excluding areas identified as "Roads, Trails, Parking Areas, and Other Development." The plan shall identify all areas to be revegetated and include palettes of appropriate container plants and seed species. The plan shall specify a representative mix of native coastal sage scrub shrubs, herbs and native grass species derived from local sources (e.g., within 20 miles of the site) that mimics the existing scrub vegetation in adjacent areas. To the extent that any Mulefat Scrub is temporarily disturbed, appropriate mulefat shrubs and associated species shall be selected to revegetate that plant community. OC Parks shall review and approve the plan and will have the option to replace any ornamental vegetation with the same species, or may select native shrub or tree alternatives. The plan shall include planting and seeding materials and methods, timing, irrigation requirements, maintenance activities, and a requirement for annual progress reports. The plan shall include, at minimum, at least 75% cover by native species within 5 years from initial planting and seed application. OCPW shall contract for implementation of the approved plan with a qualified contractor with restoration expertise. Implementation shall commence within one calendar year from completion of construction. Progress Reports shall be provided by September 30 each year after initial installation commences and shall be provided to OC Parks, USFWS and CDFW representatives involved with NCCP/HCP oversight.
Cultural Resources	
MM-CUL-1	Prior to the start of ground-disturbing activities, OCPW shall retain a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (U.S. Department of the Interior 2012) to support the implementation of cultural resources mitigation measures.
MM-CUL-2	Prior to the start of ground-disturbing activities, a cultural resources sensitivity training shall be conducted for all construction personnel. Construction personnel shall be informed of the types of archaeological resources that may be encountered, and of the proper procedures to be enacted in the event of an inadvertent discovery of archaeological resources or human remains. OCPW shall ensure that construction personnel are made available for and attend the training and retain documentation demonstrating attendance.

MM-CUL-3	An archaeological monitor (working under the direct supervision of the qualified archaeologist) shall observe all ground-disturbing activities occurring within portions of the project mapped as containing Holocene to Late Pleistocene alluvial deposits. The qualified archaeologist, in coordination with OCPW, may reduce or discontinue monitoring if it is determined that the possibility of encountering buried archaeological deposits is low based on observations of soil stratigraphy or other factors. Archaeological monitoring shall be conducted by an archaeologist familiar with the types of archaeological resources that could be encountered within the Project area. The archaeological monitor shall be empowered to halt or redirect ground-disturbing activities away from the vicinity of a discovery until the qualified archaeologist has evaluated the discovery and determined appropriate treatment. The archaeological monitor shall keep daily logs detailing the types of activities and soils observed, and any discoveries. After monitoring has been completed, the qualified archaeologist shall prepare a monitoring report that details the results of monitoring. The report shall be submitted to OCPW and any Native American groups who request a copy. A copy of the final report shall be filed at the South Central Coastal Information Center.
MM-CUL-4	In the event of the unanticipated discovery of archaeological materials, OCPW shall immediately cease all work activities in the area (within approximately 50 feet) of the discovery until it can be evaluated by the qualified archaeologist. Construction shall not resume until the qualified archaeologist has conferred with OC Public Works on the significance of the resource. If it is determined that the discovered archaeological resource constitutes a historical resource or a unique archaeological resource constitutes a historical resource or a unique archaeological resource pursuant to CEQA, avoidance and preservation in place shall be the preferred manner of mitigation. Preservation in place maintains the important relationship between artifacts and their archaeological context. Preservation in place may be accomplished by, but is not limited to, avoidance, incorporating the resource into open space, capping, or deeding the site into a permanent conservation easement. In the event that preservation in place is determined to be infeasible and data recovery through excavation is the only feasible mitigation available, an Archaeological Resources Treatment Plan shall be prepared and implemented by the qualified archaeologist in consultation with OCPW that provides for the adequate recovery of the scientifically consequential information contained in the archaeological resource. OCPW shall consult with appropriate Native American representatives in determining treatment for prehistoric or Native American resources to ensure cultural walves accrited to the resource havend that which is
	scientifically important, are considered.

MM-CUL-5	If human remains are encountered, all work shall halt in the vicinity (within 100 feet) of the find and the Orange County Coroner shall be contacted in accordance with PRC Section 5097.98 and Health and Safety Code Section 7050.5. If the County Coroner determines that the remains are Native American, the NAHC shall be notified in accordance with Health and Safety Code Section 7050.5, subdivision (c), and PRC Section 5097.98 (as amended by Assembly Bill 2641). The NAHC shall designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98. Until the landowner has conferred with the MLD, OCPW shall ensure the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities take into account the possibility of multiple burials.
<b>Geology and Soils</b>	
MM-PAL-1	Prior to the start of construction activities, OCPW shall retain a Qualified Paleontologist that meets the standards of the Society for Vertebrate Paleontology (2010) to carry out all mitigation measures related to paleontological resources.
MM-PAL-2	Prior to start of any ground disturbing activities, the qualified paleontologist shall conduct pre-construction worker paleontological resources sensitivity training. The Qualified Paleontologist shall contribute to any construction worker cultural resources sensitivity training either in person or via a training module. The training should include information on what types of paleontological resources could be encountered during excavations, what to do in case an unanticipated discovery is made by a worker, and laws protecting paleontological resources. All construction personnel shall be informed of the possibility of encountering fossils and instructed to immediately inform the construction foreman or supervisor if any bones or other potential fossils are unexpectedly unearthed in an area where a paleontological monitor is not present. OCPW shall ensure that construction personnel are made available for and attend the training and retain documentation demonstrating attendance.
MM-PAL-3	Paleontological resources monitoring shall be performed by a qualified paleontological monitor (meeting the Society of Vertebrate Paleontology standards, 2010) working under the direction of the qualified paleontologist. Paleontological resources monitoring shall be conducted for all ground disturbing activities of previously undisturbed sediments of the Puente, Santiago, Vaqueros, and Sespe formations, as well as all excavations exceeding 15 feet deep within Young Alluvial Fan deposits. The El Modelo Volcanics have low potential to contain paleontological resources and would not require monitoring. Monitoring shall consist of visually inspecting fresh exposures of rock for larger fossil remains and, where appropriate, collecting wet or dry screened standard sediment samples (up to 4.0 cubic yards) of

	promising horizons for smaller fossil remains (SVP, 2010). Per the Society for Vertebrate Paleontology standards (2010), once 50 percent of excavations or other ground disturbing activities are complete within geologic units assigned high paleontological sensitivity and no fossils are identified, monitoring can be reduced to part-time inspections or ceased entirely if determined adequate by the qualified paleontologist in consultation with OCPW. Monitoring activities shall be documented in a Paleontological Resources Monitoring Report to be prepared by the Qualified Paleontologist at the completion of construction and should be provided to OCPW within six (6) months of project completion. If fossil resources are identified during monitoring, the report shall also be filed with the Natural History Museum of Los Angeles County.
MM-PAL-4	If a paleontological resource is discovered during construction, all project-related ground disturbing activities within a 100-foot buffer around of the find shall be temporarily diverted to facilitate evaluation of the discovery and OCPW shall be immediately notified of the find. Work shall be allowed to continue outside of the buffer area. At the qualified paleontologist's discretion and to reduce any construction delay, the grading and excavation contractor should assist in removing rock samples for initial processing and evaluation of the find. All significant fossils shall be collected by the paleontological monitor and/or the qualified paleontologist. Collected fossils shall be prepared to the point of identification and catalogued before they are submitted to their final repository. Any fossils collected shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County, if such an institution agrees to accept the fossils. If no institution accepts the fossil collection, they should be donated to a local school in the area for educational purposes. Accompanying notes, maps, and photographs should also be filed at the repository and/or school.

# **Chapter 6: References**

## **Project Description**

City of Orange. 2020. Citywide Zoning Map. September 1, 2020.

\_\_\_\_. 2015. General Plan – Land Use Element. March, 2010. Revised December, 2015.

City of Tustin. 2018a. General Plan Map. November, 2018. Available at <u>https://tustinca.org/DocumentCenter/View/720/General-Plan-Map-PDF</u>, accessed November 11, 2020.

\_\_\_. 2018b. Zoning Map. November, 2018. Available at <u>https://www.tustinca.org/DocumentCenter/View/721/Zoning-Map-PDF</u>, accessed November 11, 2020.

#### Aesthetics

Caltrans. 2020. Caltrans Eligible and Officially Designated State Scenic Highways. September, 2020.

City of Orange. 2010. Natural Resources Element. Adopted March 9, 2010.

City of Tustin. 1986. East Tustin Specific Plan. Adopted March 1986, revised November 1997. City of Tustin. 2018. General Plan. Adopted November, 2018.

County of Orange. 2004. Scenic Highway Plan. Adopted November 8, 2004.

- Orange County Public Works Department (DPW). 2018. OC Public Works Standard Plans. September 2018 Edition. Khalid Bazmi, County Engineer.
- Federal Highway Administration (FWA). 2009. National Standards for Traffic Control Devices; the Manual on Uniform Traffic Control Devices for Streets and Highways; Revision; Final Rule. 23 CFR Part 655. December 16, 2009.

### Agriculture

- California Department of Conservation (DOC). 2020. California Important Farmland Finder. Available at <u>https://maps.conservation.ca.gov/DLRP/CIFF/</u>, accessed September 17, 2020.
- California Department of Fish and Wildlife (CDFW). 2015. Timberland Conservation Program. Available at <u>https://wildlife.ca.gov/conservation/timber</u>, accessed September 17, 2020.

City of Tustin. 2018. General Plan. Adopted November, 2018.

### Air Quality

South Coast Air Quality Management District, Localized Significance Thresholds, (2003, revised 2008), <u>http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds</u>, accessed October 2020.

South Coast Air Quality Management District (SCAQMD). 2003. Finalized Significance Threshold Methodology. June, 2003, revised July, 2008.

\_\_\_\_\_. 2015. Air Quality Significance Thresholds. March, 2015.

\_. 2012. Air Quality Management Plan. Chapter 4 Control Strategy and Implementation.

#### **Biological Resources**

Environmental Science Associates (ESA). 2020. Peters Canyon Bikeway Extension Project Natural Environmental Study.

#### **Cultural Resources**

- Strauss, Monica. 2020. Archaeological Survey Report for the Peters Canyon Bikeway Extension Project, Tustin and Orange, Orange County, California. October, 2020.
- U.S. Department of Interior (DOI). 2012. Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines [As Amended and Annotated]. September 29, 1983.

### **Geology and Soils**

Caltrans (2018b). Standard Specifications.

- Department of Conservation (DOC). 2020a. Liquefaction Zones of Required Investigations. Available at <u>https://maps.conservation.ca.gov/cgs/EQZApp/app/</u>, accessed September 23, 2020.
  - \_\_\_\_\_. 2020b. Earthquake Zones of Required Investigations Landslide Zones. Available at <u>https://maps.conservation.ca.gov/cgs/EQZApp/app/</u>, accessed September 23, 2020.

\_\_\_\_\_. 2020c. Earthquake Zones of Required Investigations – Alquist-Priolo Fault Zones. Available at <u>https://maps.conservation.ca.gov/cgs/EQZApp/app/</u>, accessed September 23, 2020.

- Group Delta Consultants Inc. 2020. Preliminary Foundation Report for Peters Canyon Bikeway Extension and Retaining Wall. Cities of Orange and Tustin. October 13, 2020.
- OCWD. 2015. 1997 Depth to Shallowmost Groundwater. Prepared November 02, 2015.

### **Greenhouse Gas Emissions**

California Air Resources Board (ARB). 2020. Current California GHG Emission Inventory Data. Available at <u>https://ww2.arb.ca.gov/ghg-inventory-data</u>, access October 22, 2020.

\_\_\_\_. 2018. California Greenhouse Gas Emission Inventory 2018 Edition. Available: <u>https://www.arb.ca.gov/cc/inventory/data/data.htm</u>. Accessed October 2020.

### Hazards and Hazardous Materials

- California Department of Forestry and Fire Protection (CAL FIRE). 2011. CAL FIRE Very High Fire Hazard Severity Zones in LRA- Orange. October, 2011.
- City of Orange. 2020. Evacuation Areas map. Available at <u>https://www.cityoforange.org/1916/Evacuation-Information</u>, accessed September 18, 2020.

City of Tustin. 2019. Emergency Operations Plan. Revised November, 2019.

County of Orange & Orange County Fire Authority (OC & OCFA) 2015. Local Hazard Mitigation Plan, Adopted November, 2015.

- Orange County Fire Authority (OCFA). 2007. After Action Report Santiago Fire. October 21 November 9, 2007.
- OCAir. 2020. John Wayne Airport. Webpage. Available at <u>https://www.ocair.com/default</u>, accessed September 18, 2020.

## Hydrology and Water Quality

- City of Orange 2020. Water Quality Management Plans. Webpage. Available at <u>https://www.cityoforange.org/534/Water-Quality-Management-Plans</u>, accessed September 23, 2020.
- Federal Emergency Management Agency (FEMA). 2020. National Flood Hazard Layer (NFHL) Viewer. Webpage. Available at <u>https://msc.fema.gov/portal/home</u>, accessed September 22, 2020
- Irvine Ranch Water District (IRWD). 2020. Santiago Creek Dam. Webpage. Available at <u>https://www.irwd.com/construction/santiago-creek-dam</u>, accessed October 20, 2020.
- Municipal Water District of Orange County. (MWDOC). 2016. Urban Water Management Plan. Adopted May 2015.
- Michael Baker International (MBI). 2020. Peters Canyon Reservoir: Sunny Day Dam Failure Scenario with Sequential Downstream Dam Failure. National ID No. CAO0745, prepared January 16, 2020.
- Orange County Flood Control District (OCFCD). 2012. Orange County Stormwater Program: A Cooperative Project of the County of Orange, Cities of Orange County, and Orange County Flood Control District. Adopted December, 2012.
- OCWD. 2020. Groundwater Replenishment System. Webpage. Available <u>https://www.ocwd.com/gwrs/about-gwrs/</u>, accessed September 23, 2020.
- OCWD. 2015. Groundwater Management Plan. 2015 Update. June 17, 2015.

### Land Use and Planning

Orange County Transportation Authority (OCTA). 2009. OCTA Commuter Bikeways Strategic Plan. Adopted May, 2009.

### **Mineral Resources**

- City of Orange. 2015. Orange General Plan Natural Resources Element. Revised December 8, 2015.
- City of Tustin. 2018. General Plan Conservation, Open Space, and Recreation Element. November 2018.

R.V. Miller. 1994. Generalized Mineral Land Classification of Orange County, California. 1994.

### Noise

United States Department of Labor, Occupational Safety and Health Administration, Occupational Safety and Health Standards Part 1910, Standard 1910.95. Available Online: <u>https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.95</u>, accessed October 2020.

### Population and Housing

Orange County Transportation Authority (OCTA). 2009. OCTA Commuter Bikeways Strategic Plan. Adopted May, 2009.

### **Public Services**

- City of Orange Police Department. 2020. Police Webpage. Available at <u>https://www.cityoforange.org/592/Police</u>, accessed January, 2021.
- City of Tustin Department of Parks and Recreation (Tustin Parks). 2020. Facilities Webpage. Available at <u>https://www.tustinca.org/Facilities?clear=True</u>, accessed October 20, 2020.
- City of Tustin Police Department (Tustin PD). 2020. City of Tustin Police Department Webpage. Available at <u>https://www.tustinca.org/169/Police</u>, accessed September 22, 2020.
- FireDepartment.net. 2020. Orange County Fire Authority Station 43. Webpage. Available at <u>https://www.firedepartment.net/directory/california/orange-county/tustin/orange-county-fire-authority-station-43</u>, accessed September 21, 2020.
- Orange County Department of Parks and Recreation (OCParks). 2020. Peters Canyon Regional Park. Webpage. Available at <u>https://www.ocparks.com/parks/peters/</u>, accessed September 22, 2020.

### Transportation

- City of Orange. 2015. Orange General Plan Circulation & Mobility Element. Revisions adopted December 8, 2015.
- City of Tustin. 2018. Tustin General Plan Circulation Element. Adopted June 2018.
- City of Tustin. 1997. East Tustin Specific Plan. Revisions adopted November 1997.
- County of Orange. 2020. Guidelines for Evaluating Vehicle Miles Traveled under CEQA. November 2020.
- County of Orange. 2005. Orange County General Plan Chapter IV Transportation Element. Adopted 2005.
- Metrolink. 2019. Metrolink Commuter Rail System Map. Effective November 2019.
- Orange County Transportation Authority (OCTA). 2020. System Map. Effective February 9, 2020.
- Orange County Transportation Authority (OCTA). 2019. 2019 Orange County Congestion Management Program. Adopted November 2019.
- Orange County Transportation Authority (OCTA). 2009. OCTA Commuter Bikeways Strategic Plan. Adopted May 2009.

State of California – Governor's Office of Planning and Research (OPR). 2018. Technical Advisory on Evaluating Transportation Impacts in CEQA. December 2018.

### **Utilities and Service Systems**

CalRecycle. 2020. SWIS Facility/Site Activity Details: Fran R. Bowerman Sanitary Landfill. Webpage. Available <u>https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2767?siteID=2103</u>, accessed September 22, 2020.

City of Orange. 2012. City of Orange Street Sweeping Days. April 9, 2012.

- City of Orange. 2020. Commercial Trash, Recycling, and Organics Webpage. Available at <u>https://www.cityoforange.org/1950/Commercial</u>, accessed January 7, 2020.
- City of Tustin. n.d. Street Sweeping Map. Available at <u>https://www.tustinca.org/DocumentCenter/View/459/Street-Sweeping-Map-PDF</u>, accessed September 22, 2020.
- City of Tustin. 2020. Development Review Webpage. Available at <u>https://www.tustinca.org/197/Development-</u> <u>Review#:~:text=Prior%20to%20issuance%20of%20any,all%20project%2Drelated%20const</u> <u>ruction%20and</u>, accessed October, 2020.
- Metropolitan Water District of Orange County (MWDOC). 2016. Urban Water Management Plan. May, 2016.
- Orange County Waste and Recycling (OCWR). 2020. Construction and Demolition (C&D) Program. Webpage. Available at <u>http://oclandfills.com/environmental-</u> <u>programs/construction-and-demolition-cd-program</u>, accessed September 22, 2020.

### Wildfires

- California Department of Forestry and Fire Protection (CAL FIRE). 2011. CAL FIRE Very High Fire Hazard Severity Zones in LRA-Orange. October, 2011.
- City of Orange. 2020. Evacuation Areas map. Available at <u>https://www.cityoforange.org/1916/Evacuation-Information</u>, accessed September 18, 2020.

City of Orange Fire Department (Orange FD). Plan Review – Webpage. Available at <u>https://www.cityoforange.org/203/Plan-Review</u>, accessed October 22, 2020.

City of Tustin. 2019. Emergency Operations Plan. Revised November, 2019.

This page intentionally left blank

Appendix A Air Quality, Energy, and Greenhouse Gas Emissions Calculations



#### **Unmitigated Construction Scenario**

Regional		lbs/day											
	ROG	NOX	со	SO2	PM10 Total	Total PM2.5							
Demolition	2.3	22.0	20.2	0.1	1.5	1.0							
Site Preparation	2.7	27.6	20.2	0.1	8.5	5.1							
Grading	1.8	19.3	15.9	0.0	3.5	2.1							
Building Construction - Utility & Sidewalk	1.6	14.6	18.3	0.0	1.5	0.9							
Paving - Bikeway Construction	1.1	9.0	12.8	0.0	0.7	0.5							
Striping	2.5	1.3	2.2	0.0	0.2	0.1							
Daily Maximum Emissions	2.7	27.6	20.2	0.1	8.5	5.1							
SCAQMD Regional Threshold	75	100	550	150	150	55							
Exceeds Threshold?	No	No	No	No	No	No							

Jnmitigated Construction Scenario													
Localized Emissions Summary	NOX	со	PM10 Total	Total PM2.5									
0		lb	/hr										
Demolition	21.5	19.7	1.3	1.0									
Site Preparation	27.5	18.2	8.3	5.0									
Grading	18.5	15.4	3.3	2.0									
Building Construction - Utility & Sidewalk	14.4	16.3	0.7	0.7									
Paving - Bikeway Construction	8.9	12.3	0.4	0.4									
Striping	1.3	1.8	0.1	0.1									
Daily Maximum Emissions	27.5	19.7	8.3	5.0									
SCAQMDLocalized Threshold	197	1804	12	8									
Exceeds Threshold?	No	No	No	No									

		Onsite Construction Emissions (CalEEMod) + Onsite Idling (EMFAC2017)											Offsite Construction Emissions - Running (EMFAC2017)									
summer					Fugitive	Exhaust	PM10	Fugitive	Exhaust						Fugitive	Exhaust	PM10	Fugitive	Exhaust	Total		
	ROG	NOX	со	SO2	PM10	PM10	Total	PM2.5	PM2.5	Total PM2.5	ROG	NOX	со	SO2	PM10	PM10	Total	PM2.5	PM2.5	PM2.5		
		lb/day												lb/d	day							
Demolition	2.29	21.51	19.67	0.06	0.30	1.00	1.30	0.05	0.93	0.97	0.01	0.50	0.49	0.00	0.17	0.00	0.17	0.04	0.00	0.05		
Site Preparation	2.66	27.52	18.24	0.04	7.05	1.27	8.31	3.87	1.16	5.04	0.01	0.03	0.48	0.00	0.20	0.00	0.20	0.05	0.00	0.05		
Grading	1.75	18.46	15.37	0.03	2.56	0.78	3.33	1.31	0.71	2.03	0.01	0.86	0.55	0.01	0.17	0.01	0.17	0.04	0.01	0.05		
Building Construction - Utility & Sidewalk	1.58	14.42	16.29	0.03	0.00	0.70	0.70	0.00	0.66	0.66	0.04	0.16	1.97	0.01	0.82	0.00	0.82	0.22	0.00	0.22		
Paving - Bikeway Construction	1.04	8.87	12.28	0.02	0.00	0.44	0.44	0.00	0.40	0.40	0.01	0.09	0.55	0.00	0.22	0.00	0.22	0.06	0.00	0.06		
Striping	2.50	1.30	1.81	0.00	0.00	0.07	0.07	0.00	0.07	0.07	0.01	0.03	0.40	0.00	0.17	0.00	0.17	0.04	0.00	0.05		
Regional Emissions - ALL		Regio	nal Emission	is (On-Site	Constructi	on + Work	er + Visit	ors +Vendo	r+Haul)													
		NOV	~~		Fugitive	Exhaust	PM10	Fugitive	Exhaust	T-1-1 0142 5												
	ROG	NUX	0	502	PINITO	PINITO	Iotai	PIVIZ.5	PIVIZ.5	Total PIVIZ.5												
Demolition	2.30	22.01	20.15	0.07	0.47	1.00	1.47	0.09	0.93	1.02												
Site Preparation	2.67	27.56	18.73	0.04	7.25	1.27	8.51	3.93	1.17	5.09												
Grading	1.77	19.32	15.92	0.04	2.72	0.78	3.50	1.36	0.72	2.08												
Building Construction - Utility & Sidewalk	1.61	14.59	18.26	0.03	0.82	0.70	1.52	0.22	0.66	0.88												
Paving - Bikeway Construction	1.05	8.96	12.83	0.02	0.22	0.44	0.66	0.06	0.40	0.46												
Striping	2.51	1.33	2.22	0.00	0.17	0.07	0.24	0.04	0.07	0.12												
Maximum Daily Emissions	2.67	27.56	20.15	0.07	7.25	1.27	8.51	3.93	1.17	5.09												

		On	site Constru	iction Emis	ssions (CalE	EMod) + O	nsite Idlir	ng (EMFAC2	2017)		Offsite Construction Emissions - Running (EMFAC2017)										
Winter					Fugitive	Exhaust	PM10	Fugitive	Exhaust						Fugitive	Exhaust	PM10	Fugitive	Exhaust	Total	
	ROG	NOX	со	SO2	PM10	PM10	Total	PM2.5	PM2.5	Total PM2.5	ROG	NOX	со	SO2	PM10	PM10	Total	PM2.5	PM2.5	PM2.5	
	lb/day													lb/c	day						
Demolition	2.29	21.51	19.67	0.06	0.30	1.00	1.30	0.05	0.93	0.97	0.01	0.50	0.49	0.00	0.17	0.00	0.17	0.04	0.00	0.05	
Site Preparation	2.66	27.52	18.24	0.04	7.05	1.27	8.31	3.87	1.16	5.04	0.01	0.03	0.48	0.00	0.20	0.00	0.20	0.05	0.00	0.05	
Grading	1.75	18.46	15.37	0.03	2.56	0.78	3.33	1.31	0.71	2.03	0.01	0.86	0.55	0.01	0.17	0.01	0.17	0.04	0.01	0.05	
Building Construction - Utility & Sidewalk	1.58	14.42	16.29	0.03	0.00	0.70	0.70	0.00	0.66	0.66	0.04	0.16	1.97	0.01	0.82	0.00	0.82	0.22	0.00	0.22	
Paving - Bikeway Construction	1.04	8.87	12.28	0.02	0.00	0.44	0.44	0.00	0.40	0.40	0.01	0.09	0.55	0.00	0.22	0.00	0.22	0.06	0.00	0.06	
Striping	2.50	1.30	1.81	0.00	0.00	0.07	0.07	0.00	0.07	0.07	0.01	0.03	0.40	0.00	0.17	0.00	0.17	0.04	0.00	0.05	
Regional Emissions - ALL		Regio	nal Emissio	ns (On-Site	e Construct	ion + Work	er + Visite	ors +Vendo	r+Haul)												
					Fugitive	Exhaust	PM10	Fugitive	Exhaust												
	ROG	NOX	60	502	PM10	PM10	Total	PM2.5	PM2.5	Total PM2.5											
Demolition	2.30	22.01	20.15	0.07	0.47	1.00	1.47	0.09	0.93	1.02											
Site Preparation	2.67	27.56	18.73	0.04	7.25	1.27	8.51	3.93	1.17	5.09											
Grading	1.77	19.32	15.92	0.04	2.72	0.78	3.50	1.36	0.72	2.08											
Building Construction - Utility & Sidewalk	1.61	14.59	18.26	0.03	0.82	0.70	1.52	0.22	0.66	0.88											
Paving - Bikeway Construction	1.05	8.96	12.83	0.02	0.22	0.44	0.66	0.06	0.40	0.46											
Striping	2.51	1.33	2.22	0.00	0.17	0.07	0.24	0.04	0.07	0.12											
Maximum Daily Emissions	2.67	27.56	20.15	0.07	7.25	1.27	8.51	3.93	1.17	5.09											

#### **Total On-Road Emissions**

#### **Total On-Road Emissions**

		260	Max construc	tion days per	year															
		Daily	Days	Work Hours	One-Way		Regional Emissions													
	Construction Phase	One-Way	per Phase	per Day	<b>Trip Distance</b>	Idling					(pound	s/day)					(MT/yr)			
		Trips			per Day	per Day					PM10	PM10	Total	PM2.5	PM2.5	Total	Total			
			(days)	(hours/day)	(miles)	(minutes)	ROG	NOX	со	SO2	Dust	Exh	PM10	Dust	Exh	PM2.5	CO2e			
	Demolition	2023																		
	Total Haul Trips	74																		
Demolition	Hauling	4	21	8	20	15	0.03	0.78	0.43	0.00	0.07	0.00	0.07	0.02	0.00	0.02	3.00			
2023Vendor	r Vendor	0	21	8	6.9	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2023Worke	Worker	15	21	8	14.7	0	0.01	0.03	0.40	0.00	0.17	0.00	0.17	0.04	0.00	0.05	1.32			
				Or	nroad Emissions	- Demolition	0.04	0.80	0.84	0.00	0.24	0.00	0.24	0.06	0.00	0.07	4.32			
	Site Preparation	2023																		
	Total Haul Trips	0																		
2023Hauling	Hauling	0	20	8	20	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2023Vendor	r Vendor	0	20	8	6.9	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2023Worke	Worker	18	20	8	14.7	0	0.01	0.03	0.48	0.00	0.20	0.00	0.20	0.05	0.00	0.05	1.50			
				Onroad	Emissions - Site	Preparation	0.01	0.03	0.48	0.00	0.20	0.00	0.20	0.05	0.00	0.05	1.50			
	Grading	2023																		
	Total Haul Trips	148																		
2023Hauling	Hauling	7	23	8	20	15	0.05	1.36	0.76	0.00	0.12	0.01	0.13	0.03	0.01	0.04	5.75			
2023Vendor	rVendor	0	23	8	6.9	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2023Worke	Worker	15	23	8	14.7	0	0.01	0.03	0.40	0.00	0.17	0.00	0.17	0.04	0.00	0.05	1.44			
					Onroad Emission	ons - Grading	0.06	1.39	1.16	0.01	0.29	0.01	0.30	0.08	0.01	0.08	7.19			
	Building Construction - Utility &																			
	Sidewalk	2023																		
	Total Haul Trips	0																		
2023Hauling	Hauling	0	86	8	20	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2023Vendo	rVendor	1	86	8	6.9	15	0.00	0.07	0.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	1.06			
2023Worke	Worker	73	86	8	14.7	0	0.04	0.13	1.97	0.01	0.82	0.00	0.82	0.22	0.00	0.22	26.23			
		Onro	ad Emissions -	<ul> <li>Building Cons</li> </ul>	struction - Utilit	y & Sidewalk	0.04	0.20	2.02	0.01	0.82	0.00	0.83	0.22	0.00	0.22	27.29			
	Paving - Bikeway Construction	2023																		
	Total Haul Trips	0																		
2023Hauling	Hauling	0	88	8	20	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2023Vendo	rVendor	2	88	8	6.9	15	0.01	0.14	0.10	0.00	0.01	0.00	0.01	0.00	0.00	0.00	2.16			
2023Worke	Worker	20	88	8	14.7	0	0.01	0.04	0.54	0.00	0.22	0.00	0.22	0.06	0.00	0.06	7.35			
			Onroad	Emissions - Pa	aving - Bikeway	Construction	0.02	0.17	0.64	0.00	0.24	0.00	0.24	0.06	0.00	0.06	9.51			
	Striping	2023																		
	Iotal Haul Trips	0																		
2023Hauling	Hauling	0	21	8	20	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2023Vendo	rVendor	0	21	8	6.9	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2023Worke	Worker	15	21	8	14.7	0	0.01	0.03	0.40	0.00	0.17	0.00	0.17	0.04	0.00	0.05	1.32			
					Unroad Emissi	ons - Striping	0.01	0.03	0.40	0.00	0.17	0.00	0.17	0.04	0.00	0.05	1.32			

#### **Total On-Road Emissions**

#### **Total On-Road Emissions**

200	wax construe	ction days per y	/ear												
Daily	Haul Days						Regio	onal Emiss	sions						
Construction Phase One-Way	per Phase	per Day	<b>Trip Distance</b>	Idling					(Tons/	/year)	-	_	-		(MT/yr)
Trips			per Day	per Day					PM10	PM10	Total	PM2.5	PM2.5	Total	Total
	(days)	(hours/day)	(miles)	(minutes)	ROG	NOX	со	SO2	Dust	Exh	PM10	Dust	Exh	PM2.5	CO2e
Demolition 2023															
Total Haul Trips 74															
Hauling 4	21	8	20	15	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00
Vendor 0	21	8	6.9	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker 15	21	8	14.7	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.32
					0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.32
Site Preparation 2023															
Total Haul Trips 0															
Hauling 0	20	8	20	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor 0	20	8	6.9	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker 18	20	8	14.7	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50
Grading 2023															
Total Haul Trips 148															
Hauling 7	23	8	20	15	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.75
Vendor 0	23	8	6.9	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker 15	23	8	14.7	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.44
					0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.19
Building Construction - Utility & 2023															
Total Haul Trips 0															
Hauling 0	86	8	20	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor 1	86	8	6.9	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06
Worker 73	86	8	14.7	0	0.00	0.01	0.08	0.00	0.04	0.00	0.04	0.01	0.00	0.01	26.23
					0.00	0.01	0.09	0.00	0.04	0.00	0.04	0.01	0.00	0.01	27.29
Paving - Bikeway Construction 2023															
Total Haul Trips 0															
Hauling 0	88	8	20	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor 2	88	8	6.9	15	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16
Worker 20	88	8	14.7	0	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	7.35
					0.00	0.01	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	9.51
Striping 2023															
Total Haul Trips 0															
Hauling 0	21	8	20	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor 0	21	8	6.9	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker 15	21	8	14.7	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.32
					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.32
#### Running Emissions

		F	Running Emiss	ions Factor			Running Emissions Factor						
			(grams/	mile)				(grams/mile)					
	ROG	NOX	со	SO2	PM10	PM2.5	CO2	CH4	N20				
2020Hauling Hauling	0.12467436	4.127586075	0.70244559	0.01389473	0.04956172	0.04741766	1520.07529	0.08121693	0.2410944				
2020Vendor Vendor	0.12175156	3.217634225	0.70325362	0.01222293	0.05527116	0.05287672	1311.85371	0.04440854	0.18764154				
2020Worker Worker	0.02296702	0.083024116	1.08430473	0.00306823	0.00220351	0.002029	310.119284	0.00538825	0.00712331				
2021Hauling Hauling	0.08103572	3.571515626	0.57499969	0.01347655	0.0279869	0.02677616	1477.43548	0.08019506	0.23446951				
2021Vendor Vendor	0.0717977	2.602453214	0.52331731	0.01185125	0.02991351	0.02861613	1273.54109	0.04239589	0.18204996				
2021Worker Worker	0.01983596	0.07223241	0.98341812	0.00297251	0.00205695	0.00189393	300.448479	0.00471177	0.00646256				
2022Hauling Hauling	0.02463044	2.696920068	0.45130496	0.01267644	0.01843607	0.0176385	1394.21089	0.07850131	0.22145577				
2022Vendor Vendor	0.01991806	1.889760516	0.36497107	0.01125961	0.01227567	0.01174136	1211.83967	0.04029686	0.17274956				
2022Worker Worker	0.01716262	0.063167612	0.89784164	0.00287684	0.00193578	0.00178222	290.781675	0.00413135	0.00590029				
2023Hauling Hauling	0.02438513	2.70726027	0.46544535	0.01247986	0.01859168	0.01778737	1374.48104	0.07922973	0.21840565				
2023Vendor Vendor	0.01904515	1.897817151	0.35240371	0.01108069	0.01237071	0.01183229	1193.62946	0.0405116	0.17033183				
2023Worker Worker	0.01513169	0.055897597	0.83140276	0.00279565	0.00185735	0.00170978	282.578076	0.00368669	0.00544537				
GWP	N/A	N/A	N/A	N/A	N/A	N/A	1	25	290				

	Daily	Haul Days	Work Hours	One-Way			Regiona	l Emissions				Regional E	missions	
Construction Phase	One-Way	per Phase	per Day	Trip Distance			(pour	ids/day)				(MT/)	(ear)	
	Trips			per Day	1		1		1		1	1	1	
		(days)	(hours/day)	(miles)	ROG	NOX	со	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e
Demolition Tatal Haud Talas	2023													
Total Haul Trips	74	24	0	20	0.00	0.40	0.00	0.00	0.00	0.00	2.24	0.00		2.42
Hauling	4	21	8	20	0.00	0.48	0.08	0.00	0.00	0.00	2.31	0.00	0.11	2.42
Vendor	0	21	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	15	21	8	14.7	0.01	0.03	0.40	0.00	0.00	0.00	1.31	0.00	0.01	1.32
Site Preparation	2022				0.01	0.5	0 0.	49 0.0	0.00	0.00	3.62	0.00	0.11	3.74
Total Haul Trins	2023													
Hauling	0	20		20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vender	0	20	0	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Werker	10	20	0	14.7	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.00	0.00	1.50
worker	10	20	0	14.7	0.01	0.05	2 0.40	49 0.00	0.00	0.00	1.50	0.00	0.01	1.50
Grading	2022				0.01	0.0	5 0	48 0.0	0.00	0.00	1.50	0.00	0.01	1.50
Total Haul Trins	148													
Hauling	7	23	8	20	0.01	0.84	0.14	0.00	0.01	0.01	4 43	0.01	0.20	4 64
Vendor	0	23	8	69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	15	23	8	14.7	0.00	0.03	0.40	0.00	0.00	0.00	1.43	0.00	0.00	1 44
	15	23	0	14.7	0.01	0.05	6 0	55 0.0	1 0.00	0.00	5.86	0.00	0.01	6.08
Building Construction - Util	2023													
Total Haul Trips	0													
Hauling	0	86	8	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	1	86	8	6.9	0.00	0.03	0.01	0.00	0.00	0.00	0.71	0.00	0.03	0.74
Worker	73	86	8	14.7	0.04	0.13	1.97	0.01	0.00	0.00	26.08	0.01	0.15	26.23
					0.04	0.1	6 1	97 0.0	1 0.00	0.00	26.79	0.01	0.18	26.97
Paving - Bikeway Construct	2023													
Total Haul Trips	0													
Hauling	0	88	8	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	2	88	8	6.9	0.00	0.06	0.01	0.00	0.00	0.00	1.45	0.00	0.06	1.51
Worker	20	88	8	14.7	0.01	0.04	0.54	0.00	0.00	0.00	7.31	0.00	0.04	7.35
					0.01	0.0	9 0.	55 0.0	0.00	0.00	8.76	0.00	0.10	8.86
Striping	2023													
Total Haul Trips	0													
Hauling	0	21	8	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	21	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	15	21	8	14.7	0.01	0.03	0.40	0.00	0.00	0.00	1.31	0.00	0.01	1.32
					0.01	0.0	3 0	40 0.0	0.00	0.00	1.31	0.00	0.01	1.32

#### Idling Emissions

						Idling Emissio	ons Factor			Idlin	g Emissions Fa	actor	
						(grams/m	inute)			(	grams/minute	2)	
				ROG	NOX	со	SO2	PM10	PM2.5	CO2	CH4	N2O	
		2020Hauling	Hauling	0.18203757	2.514257339	2.34424676	0.00425698	0.00364827	0.00349045	457.401286	0.01060122	0.07221486	
		2020Vendor	Vendor	0.09655158	1.389498887	1.26412887	0.00228127	0.00225118	0.00215379	244.777779	0.00633167	0.03834928	
		2020Worker	Worker	0	0	0	0	0	0	0	0	0	
		2021Hauling	Hauling	0.17992826	2.494221613	2.47137063	0.00431707	0.00153707	0.00147058	463.979458	0.01057258	0.07325903	
		2021Vendor	Vendor	0.09512038	1.358206146	1.32735389	0.00230801	0.00101987	0.00097575	247.718477	0.00631023	0.03882087	
		2021Worker	Worker	0	0	0	0	0	0	0	0	0	
		2022Hauling	Hauling	0.1794334	2.268893827	2.65540888	0.00413434	0.00124387	0.00119006	444.864297	0.01062746	0.07026495	
		2022Vendor	Vendor	0.09453686	1.21688302	1.42143188	0.00221115	0.00069792	0.00066773	237.578447	0.00634204	0.03723243	
		2022Worker	Worker	0	0	0	0	0	0	0	0	0	
		2023Hauling	Hauling	0.17974307	2.262044342	2.6647617	0.00409118	0.00119718	0.00114539	440.393976	0.01068902	0.06956683	
		2023Vendor	Vendor	0.09456838	1.210583463	1.42500372	0.00218695	0.00066414	0.00063541	235.070306	0.00635061	0.03685329	
		2023Worker	Worker	0	0	0	0	0	0	0	0	0	
			GWP	N/A	N/A	N/A	N/A	N/A	N/A	1	25	290	
Daily	Haul Days	Work Hours	Idling	Regional Emissions							Regional	Regional Emissions	
		-									· · · · ·		

Construction Phase Tripsper Phase (days)per Phase (miles)minutes (miles)report (mil		Daily	Haul Days	Work Hours	Idling			Regional En	nissions				Regional E	missions	
rrips         (gay)         (mory day)         (miles)         RO         NOX         CO         SO2         PM10         PM2.5         CO2         CM         NOX         CO2           Demolition         223         Total Haul Trips         74         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -	Construction Phase	One-Way	per Phase	per Day	minutes			(pounds,	/day)				(MT/y	ear)	
(day)         (hours/day)         (miles)         ROG         NOX         CO         SO2         PM10         PM2.5         CO2         CH4         N20         CO2e           Demolition         2023		Trips			per Day										
Densitian Total Hauling         203 74           Total Hauling         74           Vendor         0         21         8         15         0.02         0.30         0.35         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 <th>ļ</th> <th></th> <th>(days)</th> <th>(hours/day)</th> <th>(miles)</th> <th>ROG</th> <th>NOX</th> <th>CO</th> <th>SO2</th> <th>PM10</th> <th>PM2.5</th> <th>CO2</th> <th>CH4</th> <th>N2O</th> <th>CO2e</th>	ļ		(days)	(hours/day)	(miles)	ROG	NOX	CO	SO2	PM10	PM2.5	CO2	CH4	N2O	CO2e
Tradit Huming         1/4           Hauling         4         21         8         15         0.02         0.30         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0	Demolition	2023													
Hauling         4         21         8         15         0.02         0.30         0.35         0.00         0.00         0.05         0.00         0.05         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 </td <td>Total Haul Trips</td> <td>74</td> <td></td>	Total Haul Trips	74													
Vendor         0         21         8         15         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 <td>Hauling</td> <td>4</td> <td>21</td> <td>8</td> <td>15</td> <td>0.02</td> <td>0.30</td> <td>0.35</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.55</td> <td>0.00</td> <td>0.03</td> <td>0.58</td>	Hauling	4	21	8	15	0.02	0.30	0.35	0.00	0.00	0.00	0.55	0.00	0.03	0.58
Worker         15         21         8         0         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 <td>Vendor</td> <td>0</td> <td>21</td> <td>8</td> <td>15</td> <td>0.00</td>	Vendor	0	21	8	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
bit         Control         Control <thcontrol< th=""> <thcontrol< th=""> <thcontr< td=""><td>Worker</td><td>15</td><td>21</td><td>8</td><td>0</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td></thcontr<></thcontrol<></thcontrol<>	Worker	15	21	8	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sine Programmine Total Hauling         2023 0           Hauling         0         20         8         15         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.0						0.02	0.30	0.35	0.00	0.00	0.00	0.55	0.00	0.03	0.58
Tada Harrings         0           Vendor         0         20         8         15         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00	Site Preparation	2023													
Hauling         0         20         8         15         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 </td <td>Total Haul Trips</td> <td>0</td> <td></td>	Total Haul Trips	0													
Vendor         0         20         8         15         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 </td <td>Hauling</td> <td>0</td> <td>20</td> <td>8</td> <td>15</td> <td>0.00</td>	Hauling	0	20	8	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
worker         18         20         8         0         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 </td <td>Vendor</td> <td>0</td> <td>20</td> <td>8</td> <td>15</td> <td>0.00</td>	Vendor	0	20	8	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Conding         CO3         CO0	Worker	18	20	8	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading         2023           Statil Hauling         7         23         8         15         0.04         0.52         0.62         0.00         0.00         1.06         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 <td< td=""><td></td><td></td><td></td><td></td><td></td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td></td<>						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Grading Total Usual Trins	2023													
Insuma         7         2.3         8         1.5         0.00         0.02         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00<	Hauling	7	22		15	0.04	0.52	0.62	0.00	0.00	0.00	1.05	0.00	0.05	1.11
Vention         0         23         8         15         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 </td <td>Needer</td> <td>,</td> <td>25</td> <td></td> <td>15</td> <td>0.04</td> <td>0.52</td> <td>0.02</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>1.08</td> <td>0.00</td> <td>0.05</td> <td>1.11</td>	Needer	,	25		15	0.04	0.52	0.02	0.00	0.00	0.00	1.08	0.00	0.05	1.11
worker         15         23         8         0         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         1.01           Building Construction - Uhi         2023 <th< td=""><td>venuor</td><td>0</td><td>25</td><td>•</td><td>15</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td></th<>	venuor	0	25	•	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unit 0.52 0.00 0.00 0.00 0.00 0.00 0.00 0.00	worker	15	23	8	U	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Balance Construction Fuel         2023           Total Hauling         0           Hauling         0           Vendor         1           Step in Fail Hauling         0           Vendor         1           Vendor         1           Step in Fail Hauling         0           Vendor         1           Step in Fail Hauling         0           Step in Failwark Construct         73           Step in Failwark Construct         000           Pavine - Bikewark Construct         0           Total Hauling         0           9         15         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00<	Duilding Construction 11til	2022				0.04	0.52	0.62	0.00	0.00	0.00	1.00	0.00	0.05	1.11
Note head infinition           Note head	Tetel Used Trins	2023													
maming         0         88         s         15         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 <td>Iotal Haul Hips</td> <td>0</td> <td>96</td> <td></td> <td>15</td> <td>0.00</td>	Iotal Haul Hips	0	96		15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vention         1         88         8         15         0.00         0.04         0.03         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 </td <td>Needer</td> <td>1</td> <td>80</td> <td></td> <td>15</td> <td>0.00</td>	Needer	1	80		15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker         75         88         8         0         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 <td>Werker</td> <td>72</td> <td>80</td> <td>8</td> <td></td> <td>0.00</td> <td>0.04</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.01</td> <td>0.32</td>	Werker	72	80	8		0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.32
Paving - Bikeway Construct         2023           Total Haul Trips         0           Hauling         0           88         8         15         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 </td <td>worker</td> <td>/5</td> <td>00</td> <td>•</td> <td>0</td> <td>0.00</td>	worker	/5	00	•	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Training frame         2023           Training         0         88         8         15         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 <t< td=""><td>Paulas Bilanan Canatanat</td><td>2022</td><td></td><td></td><td></td><td>0.00</td><td>0.04</td><td>0.05</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.50</td><td>0.00</td><td>0.01</td><td>0.52</td></t<>	Paulas Bilanan Canatanat	2022				0.00	0.04	0.05	0.00	0.00	0.00	0.50	0.00	0.01	0.52
String         2023         String         2024         8         15         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00	Tatal Used Trias	2023													
Insuming 0 all a 1,5 0,00 0,00 0,00 0,00 0,00 0,00 0,00	Hauling	0	00		15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor         2         88         3         15         0.01         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 <td>Vender</td> <td>2</td> <td>00</td> <td>8</td> <td>15</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.60</td> <td>0.00</td> <td>0.00</td> <td>0.00</td>	Vender	2	00	8	15	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.00	0.00
Vinite         20         85         0         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00	Werker	20	00	8		0.01	0.00	0.03	0.00	0.00	0.00	0.02	0.00	0.03	0.00
Striping         2023           Total Haul Trips         0           4Hauling         0         21         8         15         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00         0.00 <t< td=""><td>worker</td><td>20</td><td>00</td><td>•</td><td>0</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td></t<>	worker	20	00	•	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<u>nanona zaza</u> Tratal Haul Trips 0 Hauling 0 21 8 15 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	Strining	2022				0.01	0.08	0.09	0.00	0.00	0.00	0.62	0.00	0.05	0.65
Hauling 0 21 8 15 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	Total Haul Trips	2023													
The mag 5 11 5 1.5 0.00 0.00 0.00 0.00 0.00 0.0	Houling	0	21		10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
venuor o 21 6 10 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Vondor	0	21	°	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker 15 21 8 0 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Worker	15	21	8	13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		13	21	8	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

#### Road Dust, Break Wear, and Tire wear Emissions

			Emission F	actors		
			(grams/r	nile)		
		PM10			PM2.5	
	RD	BW	тw	RD	BW	TW
2020Hauling Hauling	3.00E-01	0.061048007	0.03558331	7.36E-02	0.02616343	0.00889583
2020Vendor Vendor	3.00E-01	0.095694022	0.02379166	7.36E-02	0.04101172	0.00594791
2020Worker Worker	3.00E-01	0.036750011	0.008	7.36E-02	0.01575	0.002
2021Hauling Hauling	3.00E-01	0.061055751	0.0355879	7.36E-02	0.02616675	0.00889698
2021Vendor Vendor	3.00E-01	0.095697894	0.02379395	7.36E-02	0.04101338	0.00594849
2021Worker Worker	3.00E-01	0.036750011	0.008	7.36E-02	0.01575	0.002
2022Hauling Hauling	3.00E-01	0.061063462	0.03559233	7.36E-02	0.02617005	0.00889808
2022Vendor Vendor	3.00E-01	0.095701749	0.02379617	7.36E-02	0.04101504	0.00594904
2022Worker Worker	3.00E-01	0.036750011	0.008	7.36E-02	0.01575	0.002
2023Hauling Hauling	3.00E-01	0.06107028	0.03559616	7.36E-02	0.02617298	0.00889904
2023Vendor Vendor	3.00E-01	0.095705158	0.02379808	7.36E-02	0.0410165	0.00594952
2023Worker Worker	3.00E-01	0.036750011	0.008	7.36E-02	0.01575	0.002

	Daily	Haul Days	Work Hours	One-Way			Regional Er	nissions		
Construction Phase	One-Way	per Phase	per Day	<b>Trip Distance</b>			(pounds	/day)		
	Trips			per Day		PM10			PM2.5	
		(days)	(hours/day)	(miles)	RD	BW	TW	RD	BW	тw
Demolition	2023									
Total Haul Trips	74									
Hauling	4	21	8	20	0.05	0.01	0.01	0.01	0.00	0.00
Vendor	0	21	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00
Worker	15	21	8	14.7	0.15	0.02	0.00	0.04	0.01	0.00
Site Preparation	2023									
Total Haul Trips	0									
Hauling	0	20	8	20	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	20	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00
Worker	18	20	8	14.7	0.17	0.02	0.00	0.04	0.01	0.00
Grading	2023									
Total Haul Trips	148									
Hauling	7	23	8	20	0.09	0.02	0.01	0.02	0.01	0.00
Vendor	0	23	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00
Worker	15	23	8	14.7	0.15	0.02	0.00	0.04	0.01	0.00
Building Construction - Util	2023									
Total Haul Trips	0									
Hauling	0	86	8	20	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	1	86	8	6.9	0.00	0.00	0.00	0.00	0.00	0.00
Worker	73	86	8	14.7	0.71	0.09	0.02	0.17	0.04	0.00
Paving - Bikeway Construct	2023									
Total Haul Trips	0									
Hauling	0	88	8	20	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	2	88	8	69	0.01	0.00	0.00	0.00	0.00	0.00
Worker	20	88	8	14.7	0.19	0.02	0.01	0.05	0.01	0.00
Striping	2023									
Total Haul Trips	0									
Hauling	ñ	21	8	20	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0	21	8	69	0.00	0.00	0.00	0.00	0.00	0.00
Worker	15	21	8	14.7	0.00	0.00	0.00	0.00	0.00	0.00
WORKEI	13	21	0	14.7	0.15	0.02	0.00	0.04	0.01	0.00

Page 1 of 1

#### Peter's Canyon Bikeway Extention Project - South Coast Air Basin, Summer

# Peter's Canyon Bikeway Extention Project South Coast Air Basin, Summer

## **1.0 Project Characteristics**

#### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	4.00	Acre	4.00	174,240.00	0

## **1.2 Other Project Characteristics**

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	8			Operational Year	2024
Utility Company	Southern California Edisor	ı			
CO2 Intensity (Ib/MWhr)	702.44	CH4 Intensity (Ib/MWhr)	0.029	N2O Intensity 0 (Ib/MWhr)	.006

#### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Project Schedule

Trips and VMT - Project details

Demolition -

Grading -

Construction Off-road Equipment Mitigation -

Table Name	Column Nomo	Default Value	Now Voluo
	-		

tblConstructionPhase	NumDays	18.00	21.00
tblConstructionPhase	NumDays	230.00	86.00
tblConstructionPhase	NumDays	20.00	21.00
tblConstructionPhase	NumDays	8.00	23.00
tblConstructionPhase	NumDays	18.00	88.00
tblConstructionPhase	NumDays	5.00	20.00
tblGrading	MaterialExported	0.00	1,500.00
tblTripsAndVMT	VendorTripNumber	0.00	125.00

# 2.0 Emissions Summary

# 2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Year	lb/day										lb/day						
2023	2.7259	27.5643	20.3065	0.0513	18.2675	1.2674	19.5349	9.9840	1.1660	11.1501	0.0000	5,261.388 2	5,261.388 2	1.1969	0.0000	5,280.157 8	
Maximum	2.7259	27.5643	20.3065	0.0513	18.2675	1.2674	19.5349	9.9840	1.1660	11.1501	0.0000	5,261.388 2	5,261.388 2	1.1969	0.0000	5,280.157 8	

#### Mitigated Construction

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year					lb/c	day							lb/d	ay		

2023	2.7259	27.5643	20.3065	0.0513	7.2470	1.2674	8.5145	3.9263	1.1660	5.0924	0.0000	5,261.388	5,261.388	1.1969	0.0000	5,280.157
												2	2			8
Maximum	2.7259	27.5643	20.3065	0.0513	7.2470	1.2674	8.5145	3.9263	1.1660	5.0924	0.0000	5,261.388	5,261.388	1.1969	0.0000	5,280.157
												2	2			8
												1				

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	60.33	0.00	56.41	60.67	0.00	54.33	0.00	0.00	0.00	0.00	0.00	0.00

# 2.2 Overall Operational

# Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/c	lay		
Area	0.0750	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0750	0.0000	4.1000e- 004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000	0.0000	9.3000e- 004

# Mitigated Operational

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	ay		

Area	0.0750	0.0000	4.1000e- 004	0.0000		0.0	0.0	000	0	.0000	0.0000		8.8000e- 004	8.8000e 004	- 0.00	000	9	.3000e- 004
Energy	0.0000	0.0000	0.0000	0.0000		0.0	0.0	000	0	.0000	0.0000		0.0000	0.0000	0.00	)00 0.	0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.00	00 0.0	0.0 0.0	000 0.0	0 0000	.0000	0.0000		0.0000	0.0000	0.00	)00		0.0000
Total	0.0750	0.0000	4.1000e- 004	0.0000	0.00	00 0.0	000 0.0	000 0.0	0000 0	.0000	0.0000		8.8000e- 004	8.8000e 004	- 0.00	000 0.	0000 9	.3000e- 004
	ROG	ľ	NOx	0	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	e Exha PM2	2.5 PM2.4 PM2.4	5 Bio- C	O2 NBio	-CO2 T	otal CO2	CH4	N20	CO2e
Percent Reduction	0.00		0.00 0	.00	0.00	0.00	0.00	0.00	0.00	0.0	0 0.00	0.00	0.0	00 0	0.00	0.00	0.00	0.00

# 3.0 Construction Detail

#### **Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2023	1/30/2023	5	21	
2	Site Preparation	Site Preparation	2/1/2023	2/28/2023	5	20	
3	Grading	Grading	3/1/2023	3/31/2023	5	23	
4	Building Construction - Utility & Sidewalk	Building Construction	4/1/2023	7/31/2023	5	86	
5	Paving - Bikeway Construction	Paving	8/1/2023	11/30/2023	5	88	
6	Striping	Architectural Coating	12/1/2023	12/31/2023	5	21	

#### Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 11.5

Acres of Paving: 4

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 10,454

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73

Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction - Utility &	Cranes		7.00	231	0.29
Sidewalk Building Construction - Utility &	Forklifts	3	8.00	89	0.20
Sidewalk Building Construction - Utility &	Generator Sets	1	8.00	84	0.74
Sidewalk Building Construction - Utility &	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Sidewalk Building Construction - Utility &	Welders	1	8.00	46	0.45
Sidewalk Paving - Bikeway Construction	Cement and Mortar Mixers	2	6.00	9	0.56
Paving - Bikeway Construction	Pavers	1	8.00	130	0.42
Paving - Bikeway Construction	Paving Equipment	2	6.00	132	0.36
Paving - Bikeway Construction	Rollers	2	6.00	80	0.38
Paving - Bikeway Construction	Tractors/Loaders/Backhoes		8.00	97	0.37
Striping	Air Compressors		6.00	78	0.48

# Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	74.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	148.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Utility & Sidewalk	9	73.00	29.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Bikeway Construction	8	20.00	125.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Striping	1	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

# 3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	day							lb/d	lay		
Fugitive Dust					0.7643	0.0000	0.7643	0.1157	0.0000	0.1157			0.0000			0.0000
Off-Road	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280		3,746.984 0	3,746.984 0	1.0494		3,773.218 3
Total	2.2691	21.4844	19.6434	0.0388	0.7643	0.9975	1.7618	0.1157	0.9280	1.0437		3,746.984 0	3,746.984 0	1.0494		3,773.218 3

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	day		
Hauling	0.0167	0.5453	0.1822	2.5500e- 003	0.0616	1.0100e- 003	0.0626	0.0169	9.7000e- 004	0.0178		278.2296	278.2296	0.0189		278.7026
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0335	0.4810	1.5500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		154.1265	154.1265	3.6500e- 003		154.2177
Total	0.0721	0.5787	0.6632	4.1000e- 003	0.2292	2.1800e- 003	0.2314	0.0613	2.0500e- 003	0.0634		432.3561	432.3561	0.0226		432.9204

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	lay		
Fugitive Dust					0.2981	0.0000	0.2981	0.0451	0.0000	0.0451			0.0000			0.0000
Off-Road	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280	0.0000	3,746.984 0	3,746.984 0	1.0494		3,773.218 3
Total	2.2691	21.4844	19.6434	0.0388	0.2981	0.9975	1.2956	0.0451	0.9280	0.9731	0.0000	3,746.984 0	3,746.984 0	1.0494		3,773.218 3

# Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	day							lb/d	lay		
Hauling	0.0167	0.5453	0.1822	2.5500e- 003	0.0616	1.0100e- 003	0.0626	0.0169	9.7000e- 004	0.0178		278.2296	278.2296	0.0189		278.7026
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0335	0.4810	1.5500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		154.1265	154.1265	3.6500e- 003		154.2177
Total	0.0721	0.5787	0.6632	4.1000e- 003	0.2292	2.1800e- 003	0.2314	0.0613	2.0500e- 003	0.0634		432.3561	432.3561	0.0226		432.9204

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	lay		
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.308 1	3,687.308 1	1.1926		3,717.121 9
Total	2.6595	27.5242	18.2443	0.0381	18.0663	1.2660	19.3323	9.9307	1.1647	11.0954		3,687.308 1	3,687.308 1	1.1926		3,717.121 9

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0665	0.0402	0.5772	1.8600e- 003	0.2012	1.4100e- 003	0.2026	0.0534	1.3000e- 003	0.0547		184.9518	184.9518	4.3800e- 003		185.0613
Total	0.0665	0.0402	0.5772	1.8600e- 003	0.2012	1.4100e- 003	0.2026	0.0534	1.3000e- 003	0.0547		184.9518	184.9518	4.3800e- 003		185.0613

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/c	lay		
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000

Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.308 1	3,687.308 1	1.1926	3,717.121 9
Total	2.6595	27.5242	18.2443	0.0381	7.0458	1.2660	8.3119	3.8730	1.1647	5.0377	0.0000	3,687.308 1	3,687.308 1	1.1926	3,717.121 9

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	day		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0665	0.0402	0.5772	1.8600e- 003	0.2012	1.4100e- 003	0.2026	0.0534	1.3000e- 003	0.0547		184.9518	184.9518	4.3800e- 003		185.0613
Total	0.0665	0.0402	0.5772	1.8600e- 003	0.2012	1.4100e- 003	0.2026	0.0534	1.3000e- 003	0.0547		184.9518	184.9518	4.3800e- 003		185.0613

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	lay		
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.691 0	2,872.691 0	0.9291		2,895.918 2
Total	1.7109	17.9359	14.7507	0.0297	6.5523	0.7749	7.3273	3.3675	0.7129	4.0804		2,872.691 0	2,872.691 0	0.9291		2,895.918 2

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	lay		
Hauling	0.0305	0.9957	0.3327	4.6600e- 003	0.1124	1.8500e- 003	0.1142	0.0308	1.7700e- 003	0.0326		508.0714	508.0714	0.0346		508.9352
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0335	0.4810	1.5500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		154.1265	154.1265	3.6500e- 003		154.2177
Total	0.0859	1.0292	0.8137	6.2100e- 003	0.2801	3.0200e- 003	0.2831	0.0753	2.8500e- 003	0.0781		662.1979	662.1979	0.0382		663.1530

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	day							lb/c	lay		
Fugitive Dust					2.5554	0.0000	2.5554	1.3133	0.0000	1.3133			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129	0.0000	2,872.691 0	2,872.691 0	0.9291		2,895.918 2
Total	1.7109	17.9359	14.7507	0.0297	2.5554	0.7749	3.3303	1.3133	0.7129	2.0263	0.0000	2,872.691 0	2,872.691 0	0.9291		2,895.918 2

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	day							lb/e	day		
Hauling	0.0305	0.9957	0.3327	4.6600e- 003	0.1124	1.8500e- 003	0.1142	0.0308	1.7700e- 003	0.0326		508.0714	508.0714	0.0346		508.9352
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0335	0.4810	1.5500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		154.1265	154.1265	3.6500e- 003		154.2177
Total	0.0859	1.0292	0.8137	6.2100e- 003	0.2801	3.0200e- 003	0.2831	0.0753	2.8500e- 003	0.0781		662.1979	662.1979	0.0382		663.1530

# 3.5 Building Construction - Utility & Sidewalk - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/c	lay		
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.209 9	2,555.209 9	0.6079		2,570.406 1

# Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0568	1.9887	0.5764	7.0300e- 003	0.1856	2.2800e- 003	0.1878	0.0534	2.1800e- 003	0.0556	754.1058	754.1058	0.0415	755.1419
Worker	0.2695	0.1629	2.3407	7.5200e- 003	0.8160	5.7100e- 003	0.8217	0.2164	5.2600e- 003	0.2217	750.0823	750.0823	0.0178	750.5263
Total	0.3263	2.1516	2.9170	0.0146	1.0015	7.9900e- 003	1.0095	0.2698	7.4400e- 003	0.2773	1,504.188 0	1,504.188 0	0.0592	1,505.668 1

#### Mitigated Construction On-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	day		
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.209 9	2,555.209 9	0.6079		2,570.406 1

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	day							lb/c	day		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0568	1.9887	0.5764	7.0300e- 003	0.1856	2.2800e- 003	0.1878	0.0534	2.1800e- 003	0.0556		754.1058	754.1058	0.0415		755.1419
Worker	0.2695	0.1629	2.3407	7.5200e- 003	0.8160	5.7100e- 003	0.8217	0.2164	5.2600e- 003	0.2217		750.0823	750.0823	0.0178		750.5263
Total	0.3263	2.1516	2.9170	0.0146	1.0015	7.9900e- 003	1.0095	0.2698	7.4400e- 003	0.2773		1,504.188 0	1,504.188 0	0.0592		1,505.668 1

# 3.6 Paving - Bikeway Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	day							lb/c	lay		
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.430 4	1,805.430 4	0.5673		1,819.612 2
Paving	0.1191					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.0372	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.430 4	1,805.430 4	0.5673		1,819.612 2

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2448	8.5719	2.4843	0.0303	0.7998	9.8200e- 003	0.8097	0.2303	9.3800e- 003	0.2396		3,250.455 8	3,250.455 8	0.1786		3,254.921 9
Worker	0.0738	0.0446	0.6413	2.0600e- 003	0.2236	1.5700e- 003	0.2251	0.0593	1.4400e- 003	0.0607		205.5020	205.5020	4.8700e- 003		205.6236
Total	0.3186	8.6165	3.1256	0.0324	1.0234	0.0114	1.0348	0.2895	0.0108	0.3004		3,455.957 8	3,455.957 8	0.1835		3,460.545 6

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	day							lb/d	lay		
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.430 4	1,805.430 4	0.5673		1,819.612 2
Paving	0.1191					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.0372	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.430 4	1,805.430 4	0.5673		1,819.612 2

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2448	8.5719	2.4843	0.0303	0.7998	9.8200e- 003	0.8097	0.2303	9.3800e- 003	0.2396		3,250.455 8	3,250.455 8	0.1786		3,254.921 9
Worker	0.0738	0.0446	0.6413	2.0600e- 003	0.2236	1.5700e- 003	0.2251	0.0593	1.4400e- 003	0.0607		205.5020	205.5020	4.8700e- 003		205.6236
Total	0.3186	8.6165	3.1256	0.0324	1.0234	0.0114	1.0348	0.2895	0.0108	0.3004		3,455.957 8	3,455.957 8	0.1835		3,460.545 6

# 3.7 Striping - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	lay		
Archit. Coating	2.3074					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Off-Road	0.1917	1.3030	1.8111	2.9700e- 003	0.0708	0.0708	0.0708	0.0708	281.4481	281.4481	0.0168	281.8690
Total	2.4990	1.3030	1.8111	2.9700e- 003	0.0708	0.0708	0.0708	0.0708	281.4481	281.4481	0.0168	281.8690

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0335	0.4810	1.5500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		154.1265	154.1265	3.6500e- 003		154.2177
Total	0.0554	0.0335	0.4810	1.5500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		154.1265	154.1265	3.6500e- 003		154.2177

## Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/c	lay		
Archit. Coating	2.3074					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e- 003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	2.4990	1.3030	1.8111	2.9700e- 003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/d	day		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0335	0.4810	1.5500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		154.1265	154.1265	3.6500e- 003		154.2177
Total	0.0554	0.0335	0.4810	1.5500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		154.1265	154.1265	3.6500e- 003		154.2177

# 4.0 Operational Detail - Mobile

# 4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	lay		
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

# 4.2 Trip Summary Information

	Aver	age Daily Trip I	Rate	Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

# 4.3 Trip Type Information

		Miles			Trip %			Trip Purpos	e %
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

# 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.553363	0.042540	0.203692	0.115607	0.014606	0.005830	0.021800	0.032323	0.002120	0.001725	0.004837	0.000711	0.000846

# 5.0 Energy Detail

Historical Energy Use: N

# 5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	ay							lb/d	lay		
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

# 5.2 Energy by Land Use - NaturalGas <u>Unmitigated</u>

	NaturalGa s Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					lb/d	day							lb/d	day		
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

#### **Mitigated**

	NaturalGa s Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					lb/•	day							lb/e	day		
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

# 6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	lay		
Mitigated	0.0750	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004
Unmitigated	0.0750	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004

# 6.2 Area by SubCategory

<u>Unmitigated</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory					lb/c	lay							lb/c	lay		
Architectural Coating	0.0133					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0617					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.0000e- 005	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004
Total	0.0750	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004

**Mitigated** 

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory					lb/c	lay							lb/d	lay		
Architectural Coating	0.0133					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0617					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.0000e- 005	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004
Total	0.0750	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004

# 7.0 Water Detail

# 7.1 Mitigation Measures Water

# 8.0 Waste Detail

# 8.1 Mitigation Measures Waste

# 9.0 Operational Offroad

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

# **10.0 Stationary Equipment**

# Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
<u>Boilers</u>						
Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type	
User Defined Equipment						-

Equipment Type Number
-----------------------

11.0 Vegetation

Page 1 of 1

#### Peter's Canyon Bikeway Extention Project - South Coast Air Basin, Winter

# Peter's Canyon Bikeway Extention Project South Coast Air Basin, Winter

## **1.0 Project Characteristics**

#### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	4.00	Acre	4.00	174,240.00	0

## **1.2 Other Project Characteristics**

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	8			Operational Year	2024
Utility Company	Southern California Edisor	ı			
CO2 Intensity (Ib/MWhr)	702.44	CH4 Intensity (Ib/MWhr)	0.029	N2O Intensity 0. (Ib/MWhr)	006

#### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Project Schedule

Trips and VMT - Project details

Demolition -

Grading -

Construction Off-road Equipment Mitigation -

Table Name	Column Nomo	Default Value	Now Voluo
	-		

tblConstructionPhase	NumDays	18.00	21.00
tblConstructionPhase	NumDays	230.00	86.00
tblConstructionPhase	NumDays	20.00	21.00
tblConstructionPhase	NumDays	8.00	23.00
tblConstructionPhase	NumDays	18.00	88.00
tblConstructionPhase	NumDays	5.00	20.00
tblGrading	MaterialExported	0.00	1,500.00
tblTripsAndVMT	VendorTripNumber	0.00	125.00

# 2.0 Emissions Summary

# 2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year					lb/c	lay							lb/c	lay		
2023	2.7331	27.5683	20.2677	0.0504	18.2675	1.2674	19.5349	9.9840	1.1660	11.1501	0.0000	5,161.045 4	5,161.045 4	1.1966	0.0000	5,180.078 1
Maximum	2.7331	27.5683	20.2677	0.0504	18.2675	1.2674	19.5349	9.9840	1.1660	11.1501	0.0000	5,161.045 4	5,161.045 4	1.1966	0.0000	5,180.078 1

#### Mitigated Construction

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year					lb/c	day							lb/d	ay		

2023	2.7331	27.5683	20.2677	0.0504	7.2470	1.2674	8.5145	3.9263	1.1660	5.0924	0.0000	5,161.045	5,161.045	1.1966	0.0000	5,180.078
												4	4			1
Maximum	2.7331	27.5683	20.2677	0.0504	7.2470	1.2674	8.5145	3.9263	1.1660	5.0924	0.0000	5,161.045	5,161.045	1.1966	0.0000	5,180.078
												4	4			1

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	60.33	0.00	56.41	60.67	0.00	54.33	0.00	0.00	0.00	0.00	0.00	0.00

# 2.2 Overall Operational

# Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/c	lay		
Area	0.0750	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0750	0.0000	4.1000e- 004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000	0.0000	9.3000e- 004

# Mitigated Operational

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	ay		

Area	0.0750	0.0000	4.1000e- 004	0.0000		0.0	0.0	000	0	.0000	0.0000		8.8000e- 004	8.8000e 004	- 0.00	000	9	.3000e- 004
Energy	0.0000	0.0000	0.0000	0.0000		0.0	0.0	000	0	.0000	0.0000		0.0000	0.0000	0.00	)00 0.	0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.00	00 0.0	0.0 0.0	000 0.0	0 0000	.0000	0.0000		0.0000	0.0000	0.00	)00		0.0000
Total	0.0750	0.0000	4.1000e- 004	0.0000	0.00	00 0.0	000 0.0	000 0.0	0000 0	.0000	0.0000		8.8000e- 004	8.8000e 004	- 0.00	000 0.	0000 9	.3000e- 004
	ROG	ľ	NOx	0	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	e Exha PM2	2.5 PM2.4 PM2.4	5 Bio- C	O2 NBio	-CO2 T	otal CO2	CH4	N20	CO2e
Percent Reduction	0.00		0.00 0	.00	0.00	0.00	0.00	0.00	0.00	0.0	0 0.00	0.00	0.0	00 0	0.00	0.00	0.00	0.00

# 3.0 Construction Detail

#### **Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2023	1/30/2023	5	21	
2	Site Preparation	Site Preparation	2/1/2023	2/28/2023	5	20	
3	Grading	Grading	3/1/2023	3/31/2023	5	23	
4	Building Construction - Utility & Sidewalk	Building Construction	4/1/2023	7/31/2023	5	86	
5	Paving - Bikeway Construction	Paving	8/1/2023	11/30/2023	5	88	
6	Striping	Architectural Coating	12/1/2023	12/31/2023	5	21	

#### Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 11.5

Acres of Paving: 4

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 10,454

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73

Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction - Utility &	Cranes		7.00	231	0.29
Sidewalk Building Construction - Utility &	Forklifts	3	8.00	89	0.20
Sidewalk Building Construction - Utility &	Generator Sets	1	8.00	84	0.74
Sidewalk Building Construction - Utility &	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Sidewalk Building Construction - Utility &	Welders	1	8.00	46	0.45
Sidewalk Paving - Bikeway Construction	Cement and Mortar Mixers	2	6.00	9	0.56
Paving - Bikeway Construction	Pavers	1	8.00	130	0.42
Paving - Bikeway Construction	Paving Equipment	2	6.00	132	0.36
Paving - Bikeway Construction	Rollers	2	6.00	80	0.38
Paving - Bikeway Construction	Tractors/Loaders/Backhoes		8.00	97	0.37
Striping	Air Compressors		6.00	78	0.48

# Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	74.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	148.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Utility & Sidewalk	9	73.00	29.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Bikeway Construction	8	20.00	125.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Striping	1	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

# 3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	lay		
Fugitive Dust					0.7643	0.0000	0.7643	0.1157	0.0000	0.1157			0.0000			0.0000
Off-Road	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280		3,746.984 0	3,746.984 0	1.0494		3,773.218 3
Total	2.2691	21.4844	19.6434	0.0388	0.7643	0.9975	1.7618	0.1157	0.9280	1.0437		3,746.984 0	3,746.984 0	1.0494		3,773.218 3

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	day		
Hauling	0.0172	0.5485	0.1906	2.5100e- 003	0.0616	1.0400e- 003	0.0626	0.0169	9.9000e- 004	0.0179		273.4435	273.4435	0.0195		273.9310
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0614	0.0367	0.4338	1.4500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		144.5539	144.5539	3.4100e- 003		144.6391
Total	0.0785	0.5852	0.6244	3.9600e- 003	0.2292	2.2100e- 003	0.2314	0.0613	2.0700e- 003	0.0634		417.9974	417.9974	0.0229		418.5701

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	lay		
Fugitive Dust					0.2981	0.0000	0.2981	0.0451	0.0000	0.0451			0.0000			0.0000
Off-Road	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280	0.0000	3,746.984 0	3,746.984 0	1.0494		3,773.218 3
Total	2.2691	21.4844	19.6434	0.0388	0.2981	0.9975	1.2956	0.0451	0.9280	0.9731	0.0000	3,746.984 0	3,746.984 0	1.0494		3,773.218 3

# Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	day							lb/d	lay		
Hauling	0.0172	0.5485	0.1906	2.5100e- 003	0.0616	1.0400e- 003	0.0626	0.0169	9.9000e- 004	0.0179		273.4435	273.4435	0.0195		273.9310
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0614	0.0367	0.4338	1.4500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		144.5539	144.5539	3.4100e- 003		144.6391
Total	0.0785	0.5852	0.6244	3.9600e- 003	0.2292	2.2100e- 003	0.2314	0.0613	2.0700e- 003	0.0634		417.9974	417.9974	0.0229		418.5701

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/c	lay		
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.308 1	3,687.308 1	1.1926		3,717.121 9
Total	2.6595	27.5242	18.2443	0.0381	18.0663	1.2660	19.3323	9.9307	1.1647	11.0954		3,687.308 1	3,687.308 1	1.1926		3,717.121 9

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0736	0.0441	0.5205	1.7400e- 003	0.2012	1.4100e- 003	0.2026	0.0534	1.3000e- 003	0.0547		173.4647	173.4647	4.0900e- 003		173.5669
Total	0.0736	0.0441	0.5205	1.7400e- 003	0.2012	1.4100e- 003	0.2026	0.0534	1.3000e- 003	0.0547		173.4647	173.4647	4.0900e- 003		173.5669

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/c	lay		
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000

Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.308 1	3,687.308 1	1.1926	3,717.121 9
Total	2.6595	27.5242	18.2443	0.0381	7.0458	1.2660	8.3119	3.8730	1.1647	5.0377	0.0000	3,687.308 1	3,687.308 1	1.1926	3,717.121 9

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0736	0.0441	0.5205	1.7400e- 003	0.2012	1.4100e- 003	0.2026	0.0534	1.3000e- 003	0.0547		173.4647	173.4647	4.0900e- 003		173.5669
Total	0.0736	0.0441	0.5205	1.7400e- 003	0.2012	1.4100e- 003	0.2026	0.0534	1.3000e- 003	0.0547		173.4647	173.4647	4.0900e- 003		173.5669

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	lay		
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.691 0	2,872.691 0	0.9291		2,895.918 2
Total	1.7109	17.9359	14.7507	0.0297	6.5523	0.7749	7.3273	3.3675	0.7129	4.0804		2,872.691 0	2,872.691 0	0.9291		2,895.918 2

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/d	day		
Hauling	0.0313	1.0016	0.3481	4.5800e- 003	0.1124	1.9000e- 003	0.1143	0.0308	1.8200e- 003	0.0326		499.3316	499.3316	0.0356		500.2218
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0614	0.0367	0.4338	1.4500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		144.5539	144.5539	3.4100e- 003		144.6391
Total	0.0927	1.0383	0.7818	6.0300e- 003	0.2801	3.0700e- 003	0.2831	0.0753	2.9000e- 003	0.0782		643.8855	643.8855	0.0390		644.8609

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	day							lb/c	lay		
Fugitive Dust					2.5554	0.0000	2.5554	1.3133	0.0000	1.3133			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129	0.0000	2,872.691 0	2,872.691 0	0.9291		2,895.918 2
Total	1.7109	17.9359	14.7507	0.0297	2.5554	0.7749	3.3303	1.3133	0.7129	2.0263	0.0000	2,872.691 0	2,872.691 0	0.9291		2,895.918 2

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	day							lb/o	day		
Hauling	0.0313	1.0016	0.3481	4.5800e- 003	0.1124	1.9000e- 003	0.1143	0.0308	1.8200e- 003	0.0326		499.3316	499.3316	0.0356		500.2218
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0614	0.0367	0.4338	1.4500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		144.5539	144.5539	3.4100e- 003		144.6391
Total	0.0927	1.0383	0.7818	6.0300e- 003	0.2801	3.0700e- 003	0.2831	0.0753	2.9000e- 003	0.0782		643.8855	643.8855	0.0390		644.8609

# 3.5 Building Construction - Utility & Sidewalk - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/c	lay		
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.209 9	2,555.209 9	0.6079		2,570.406 1

# Unmitigated Construction Off-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/c	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0597	1.9780	0.6296	6.8400e- 003	0.1856	2.3900e- 003	0.1880	0.0534	2.2900e- 003	0.0557	733.7873	733.7873	0.0440	734.8864
Worker	0.2986	0.1788	2.1110	7.0600e- 003	0.8160	5.7100e- 003	0.8217	0.2164	5.2600e- 003	0.2217	703.4956	703.4956	0.0166	703.9103
Total	0.3584	2.1567	2.7406	0.0139	1.0015	8.1000e- 003	1.0096	0.2698	7.5500e- 003	0.2774	1,437.282 9	1,437.282 9	0.0606	1,438.796 7

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	lay		
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.209 9	2,555.209 9	0.6079		2,570.406 1

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	day		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0597	1.9780	0.6296	6.8400e- 003	0.1856	2.3900e- 003	0.1880	0.0534	2.2900e- 003	0.0557		733.7873	733.7873	0.0440		734.8864
Worker	0.2986	0.1788	2.1110	7.0600e- 003	0.8160	5.7100e- 003	0.8217	0.2164	5.2600e- 003	0.2217		703.4956	703.4956	0.0166		703.9103
Total	0.3584	2.1567	2.7406	0.0139	1.0015	8.1000e- 003	1.0096	0.2698	7.5500e- 003	0.2774		1,437.282 9	1,437.282 9	0.0606		1,438.796 7
# 3.6 Paving - Bikeway Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	day							lb/d	lay		
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.430 4	1,805.430 4	0.5673		1,819.612 2
Paving	0.1191					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.0372	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.430 4	1,805.430 4	0.5673		1,819.612 2

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/d	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2575	8.5257	2.7139	0.0295	0.7998	0.0103	0.8102	0.2303	9.8600e- 003	0.2401		3,162.876 4	3,162.876 4	0.1895		3,167.613 7
Worker	0.0818	0.0490	0.5784	1.9300e- 003	0.2236	1.5700e- 003	0.2251	0.0593	1.4400e- 003	0.0607		192.7385	192.7385	4.5400e- 003		192.8521
Total	0.3393	8.5746	3.2923	0.0314	1.0234	0.0119	1.0353	0.2895	0.0113	0.3009		3,355.615 0	3,355.615 0	0.1940		3,360.465 9

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	day							lb/d	lay		
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.430 4	1,805.430 4	0.5673		1,819.612 2
Paving	0.1191					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.0372	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.430 4	1,805.430 4	0.5673		1,819.612 2

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2575	8.5257	2.7139	0.0295	0.7998	0.0103	0.8102	0.2303	9.8600e- 003	0.2401		3,162.876 4	3,162.876 4	0.1895		3,167.613 7
Worker	0.0818	0.0490	0.5784	1.9300e- 003	0.2236	1.5700e- 003	0.2251	0.0593	1.4400e- 003	0.0607		192.7385	192.7385	4.5400e- 003		192.8521
Total	0.3393	8.5746	3.2923	0.0314	1.0234	0.0119	1.0353	0.2895	0.0113	0.3009		3,355.615 0	3,355.615 0	0.1940		3,360.465 9

#### 3.7 Striping - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	lay		
Archit. Coating	2.3074					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Off-Road	0.1917	1.3030	1.8111	2.9700e- 003	0.0708	0.0708	0.0708	0.0708	281.4481	281.4481	0.0168	281.8690
Total	2.4990	1.3030	1.8111	2.9700e- 003	0.0708	0.0708	0.0708	0.0708	281.4481	281.4481	0.0168	281.8690

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0614	0.0367	0.4338	1.4500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		144.5539	144.5539	3.4100e- 003		144.6391
Total	0.0614	0.0367	0.4338	1.4500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		144.5539	144.5539	3.4100e- 003		144.6391

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/c	lay		
Archit. Coating	2.3074					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e- 003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	2.4990	1.3030	1.8111	2.9700e- 003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	lay							lb/d	lay		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0614	0.0367	0.4338	1.4500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		144.5539	144.5539	3.4100e- 003		144.6391
Total	0.0614	0.0367	0.4338	1.4500e- 003	0.1677	1.1700e- 003	0.1688	0.0445	1.0800e- 003	0.0456		144.5539	144.5539	3.4100e- 003		144.6391

## 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/c	lay		
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

#### 4.2 Trip Summary Information

	Aver	age Daily Trip I	Rate	Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

#### 4.3 Trip Type Information

		Miles			Trip %			Trip Purpos	e %
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

#### 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.553363	0.042540	0.203692	0.115607	0.014606	0.005830	0.021800	0.032323	0.002120	0.001725	0.004837	0.000711	0.000846

## 5.0 Energy Detail

Historical Energy Use: N

#### 5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/d	ay							lb/d	lay		
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

# 5.2 Energy by Land Use - NaturalGas <u>Unmitigated</u>

	NaturalGa s Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					lb/d	day							lb/d	day		
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

#### **Mitigated**

	NaturalGa s Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					lb/•	day							lb/e	day		
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

#### 6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/c	lay							lb/d	lay		
Mitigated	0.0750	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004
Unmitigated	0.0750	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004

## 6.2 Area by SubCategory

<u>Unmitigated</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory					lb/c	lay							lb/c	lay		
Architectural Coating	0.0133					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0617					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.0000e- 005	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004
Total	0.0750	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004

**Mitigated** 

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory					lb/c	lay							lb/d	lay		
Architectural Coating	0.0133					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0617					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.0000e- 005	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004
Total	0.0750	0.0000	4.1000e- 004	0.0000		0.0000	0.0000		0.0000	0.0000		8.8000e- 004	8.8000e- 004	0.0000		9.3000e- 004

## 7.0 Water Detail

#### 7.1 Mitigation Measures Water

#### 8.0 Waste Detail

#### 8.1 Mitigation Measures Waste

#### 9.0 Operational Offroad

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

#### **10.0 Stationary Equipment**

#### Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
<u>Boilers</u>						
Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type	
User Defined Equipment						-

Equipment Type Number
-----------------------

11.0 Vegetation

Page 1 of 1

#### Peter's Canyon Bikeway Extention Project - South Coast Air Basin, Annual

#### Peter's Canyon Bikeway Extention Project South Coast Air Basin, Annual

#### **1.0 Project Characteristics**

#### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	4.00	Acre	4.00	174,240.00	0

#### **1.2 Other Project Characteristics**

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	8			Operational Year	2024
Utility Company	Southern California Edisor	n			
CO2 Intensity (Ib/MWhr)	702.44	CH4 Intensity (Ib/MWhr)	0.029	N2O Intensity 0. (Ib/MWhr)	006

#### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Project Schedule

Trips and VMT - Project details

Demolition -

Grading -

Construction Off-road Equipment Mitigation -

Table Name	Column Namo	Default Value	Now Value
	Column Name	Delault value	
Table Name	Column Name	Delault Value	

tblConstructionPhase	NumDays	18.00	21.00
tblConstructionPhase	NumDays	230.00	86.00
tblConstructionPhase	NumDays	20.00	21.00
tblConstructionPhase	NumDays	ئىسىسىسىسىسىسىسىسىسىسىسىسىسىسىسىسىسىسىس	23.00
tblConstructionPhase	NumDays	18.00	88.00
tblConstructionPhase	NumDays	5.00	20.00
tblGrading	MaterialExported	0.00	1,500.00
tblTripsAndVMT	VendorTripNumber	0.00	125.00

## 2.0 Emissions Summary

#### 2.1 Overall Construction

#### Unmitigated Construction

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year					tons	s/yr							MT	/yr		
2023	0.2409	2.2227	2.0981	5.3100e- 003	0.3599	0.0830	0.4429	0.1657	0.0772	0.2429	0.0000	480.4065	480.4065	0.0875	0.0000	482.5949
Maximum	0.2409	2.2227	2.0981	5.3100e- 003	0.3599	0.0830	0.4429	0.1657	0.0772	0.2429	0.0000	480.4065	480.4065	0.0875	0.0000	482.5949

#### Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year					tons	s/yr							MT/	/yr		

2023	0.2409	2.2227	2.0981	5.3100e- 003	0.1988	0.0830	0.2818	0.0808	0.0772	0.1580	0.0000	480.4062	480.4062	0.0875	0.0000	482.5946
Maximum	0.2409	2.2227	2.0981	5.3100e- 003	0.1988	0.0830	0.2818	0.0808	0.0772	0.1580	0.0000	480.4062	480.4062	0.0875	0.0000	482.5946

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	44.75	0.00	36.37	51.26	0.00	34.96	0.00	0.00	0.00	0.00	0.00	0.00
Quarter	St	art Date	En	d Date	Maximu	m Unmitiga	ated ROG +	NOX (tons	/quarter)	Maxir	num Mitigat	ed ROG +	NOX (tons/q	juarter)	1	

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2023	3-31-2023	0.7947	0.7947
2	4-1-2023	6-30-2023	0.5992	0.5992
3	7-1-2023	9-30-2023	0.6129	0.6129
		Highest	0.7947	0.7947

## 2.2 Overall Operational

#### Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	/yr		
Area	0.0137	0.0000	5.0000e- 005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e- 004	1.0000e- 004	0.0000	0.0000	1.1000e- 004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0137	0.0000	5.0000e- 005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000e- 004	1.0000e- 004	0.0000	0.0000	1.1000e- 004

#### Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugiti PM2.	ve Exh .5 PN	aust 12.5	PM2.5 Total	Bio- CO2	2 NBi CO	р- То <sup>-</sup> 2	tal CO2	CH4	N20	) (	202e
Category					tor	is/yr									МТ	/yr			
Area	0.0137	0.0000	5.0000e- 005	0.0000		0.0000	0.0000		0.0	000	0.0000	0.0000	1.000 004	0e- 1. 1	0000e- 004	0.0000	0.00	00 1.	1000e- 004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0	000	0.0000	0.0000	0.00	00 0	0.0000	0.0000	0.00	0 00	.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	0.0	000	0.0000	0.0000	0.00	00 0	0.0000	0.0000	0.00	0 00	.0000
Waste						0.0000	0.0000		0.0	000	0.0000	0.0000	0.00	00 0	0.0000	0.0000	0.00	0 00	.0000
Water						0.0000	0.0000		0.0	000	0.0000	0.0000	0.00	00 00	0.0000	0.0000	0.00	0 0	.0000
Total	0.0137	0.0000	5.0000e- 005	0.0000	0.0000	0.0000	0.0000	0.000	0 0.0	000	0.0000	0.0000	1.000 004	0e- 1. 1	0000e- 004	0.0000	0.00	00 1.	1000e- 004
	ROG	N	Ox	co s	O2 Fu P	gitive Exl M10 Pl	naust Pl M10 To	W10 otal	Fugitive PM2.5	Exhai PM2	ust PM: 2.5 Tot	2.5 Bio- tal	- CO2   N	lBio-CO	2 Tot CO	al C 2	H4	N20	CO2e
Percent Reduction	0.00	0	.00 0	0.00 0	.00 0	0.00 0	.00 0	.00	0.00	0.00	0 0.0	0 0	.00	0.00	0.0	0 0	.00	0.00	0.00

## 3.0 Construction Detail

#### **Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2023	1/30/2023	5	21	
2	Site Preparation	Site Preparation	2/1/2023	2/28/2023	5	20	
3	Grading	Grading	3/1/2023	3/31/2023	5	23	
4	Building Construction - Utility &	Building Construction	4/1/2023	7/31/2023	5	86	
5	Paving - Bikeway Construction	Paving	8/1/2023	11/30/2023	5	88	
6	Striping	Architectural Coating	12/1/2023	12/31/2023	5	21	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 11.5

Acres of Paving: 4

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 10,454

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	33	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers		8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes		8.00	97	0.37
Grading	Excavators		8.00	158	0.38
Grading	Graders		8.00	187	0.41
Grading	Rubber Tired Dozers	<b>111</b>	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	<sup>101</sup>	8.00	97	0.37
Building Construction - Utility &	Cranes		7.00	231	0.29
Sidewalk Building Construction - Utility &	Forklifts		8.00	89	0.20
Sidewalk Building Construction - Utility &	Generator Sets	100-00-00-00-00-00-00-00-00-00-00-00-00-	8.00	84	0.74
Sidewalk Building Construction - Utility &	Tractors/Loaders/Backhoes		7.00	97	0.37
Sidewalk Building Construction - Utility &	Welders		8.00	46	0.45
Sidewaik Paving - Bikeway Construction	Cement and Mortar Mixers	2	6.00	9	0.56
Paving - Bikeway Construction	Pavers	<b>11</b>	8.00	130	0.42
Paving - Bikeway Construction	Paving Equipment	<sup>nu</sup>	6.00	132	0.36
Paving - Bikeway Construction	Rollers	<sup>nu</sup>	6.00	80	0.38
Paving - Bikeway Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Striping	Air Compressors	11. 11. 11.	6.00	78	0.48

#### Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle	Hauling Vehicle
									Class	Class
Demolition	6	15.00	0.00	74.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	148.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction -	9	73.00	29.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Bikeway	8	20.00	125.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Striping	1	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

#### 3.1 Mitigation Measures Construction

Water Exposed Area

#### 3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	/yr		
Fugitive Dust					8.0200e- 003	0.0000	8.0200e- 003	1.2200e- 003	0.0000	1.2200e- 003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0238	0.2256	0.2063	4.1000e- 004		0.0105	0.0105		9.7400e- 003	9.7400e- 003	0.0000	35.6917	35.6917	0.0100	0.0000	35.9416
Total	0.0238	0.2256	0.2063	4.1000e- 004	8.0200e- 003	0.0105	0.0185	1.2200e- 003	9.7400e- 003	0.0110	0.0000	35.6917	35.6917	0.0100	0.0000	35.9416

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	ſ/yr		
Hauling	1.8000e- 004	5.8600e- 003	1.9500e- 003	3.0000e- 005	6.4000e- 004	1.0000e- 005	6.5000e- 004	1.7000e- 004	1.0000e- 005	1.8000e- 004	0.0000	2.6311	2.6311	1.8000e- 004	0.0000	2.6357
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e- 004	4.0000e- 004	4.6800e- 003	2.0000e- 005	1.7300e- 003	1.0000e- 005	1.7400e- 003	4.6000e- 004	1.0000e- 005	4.7000e- 004	0.0000	1.3986	1.3986	3.0000e- 005	0.0000	1.3995
Total	7.6000e- 004	6.2600e- 003	6.6300e- 003	5.0000e- 005	2.3700e- 003	2.0000e- 005	2.3900e- 003	6.3000e- 004	2.0000e- 005	6.5000e- 004	0.0000	4.0297	4.0297	2.1000e- 004	0.0000	4.0351

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							МТ	/yr		
Fugitive Dust					3.1300e- 003	0.0000	3.1300e- 003	4.7000e- 004	0.0000	4.7000e- 004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0238	0.2256	0.2063	4.1000e- 004		0.0105	0.0105		9.7400e- 003	9.7400e- 003	0.0000	35.6916	35.6916	0.0100	0.0000	35.9415
Total	0.0238	0.2256	0.2063	4.1000e- 004	3.1300e- 003	0.0105	0.0136	4.7000e- 004	9.7400e- 003	0.0102	0.0000	35.6916	35.6916	0.0100	0.0000	35.9415

#### Mitigated Construction Off-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr				MT	/yr					
Hauling	1.8000e- 004	5.8600e- 003	1.9500e- 003	3.0000e- 005	6.4000e- 004	1.0000e- 005	6.5000e- 004	1.7000e- 004	1.0000e- 005	1.8000e- 004	0.0000	2.6311	2.6311	1.8000e- 004	0.0000	2.6357

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e- 004	4.0000e- 004	4.6800e- 003	2.0000e- 005	1.7300e- 003	1.0000e- 005	1.7400e- 003	4.6000e- 004	1.0000e- 005	4.7000e- 004	0.0000	1.3986	1.3986	3.0000e- 005	0.0000	1.3995
Total	7.6000e- 004	6.2600e- 003	6.6300e- 003	5.0000e- 005	2.3700e- 003	2.0000e- 005	2.3900e- 003	6.3000e- 004	2.0000e- 005	6.5000e- 004	0.0000	4.0297	4.0297	2.1000e- 004	0.0000	4.0351

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	/yr		
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.2752	0.1824	3.8000e- 004		0.0127	0.0127		0.0117	0.0117	0.0000	33.4507	33.4507	0.0108	0.0000	33.7212
Total	0.0266	0.2752	0.1824	3.8000e- 004	0.1807	0.0127	0.1933	0.0993	0.0117	0.1110	0.0000	33.4507	33.4507	0.0108	0.0000	33.7212

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							МТ	ī/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e- 004	4.5000e- 004	5.3500e- 003	2.0000e- 005	1.9700e- 003	1.0000e- 005	1.9900e- 003	5.2000e- 004	1.0000e- 005	5.4000e- 004	0.0000	1.5984	1.5984	4.0000e- 005	0.0000	1.5994
Total	6.6000e- 004	4.5000e- 004	5.3500e- 003	2.0000e- 005	1.9700e- 003	1.0000e- 005	1.9900e- 003	5.2000e- 004	1.0000e- 005	5.4000e- 004	0.0000	1.5984	1.5984	4.0000e- 005	0.0000	1.5994

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							МТ	/yr		
Fugitive Dust					0.0705	0.0000	0.0705	0.0387	0.0000	0.0387	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.2752	0.1824	3.8000e- 004		0.0127	0.0127		0.0117	0.0117	0.0000	33.4507	33.4507	0.0108	0.0000	33.7211
Total	0.0266	0.2752	0.1824	3.8000e- 004	0.0705	0.0127	0.0831	0.0387	0.0117	0.0504	0.0000	33.4507	33.4507	0.0108	0.0000	33.7211

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	ī/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e- 004	4.5000e- 004	5.3500e- 003	2.0000e- 005	1.9700e- 003	1.0000e- 005	1.9900e- 003	5.2000e- 004	1.0000e- 005	5.4000e- 004	0.0000	1.5984	1.5984	4.0000e- 005	0.0000	1.5994
Total	6.6000e- 004	4.5000e- 004	5.3500e- 003	2.0000e- 005	1.9700e- 003	1.0000e- 005	1.9900e- 003	5.2000e- 004	1.0000e- 005	5.4000e- 004	0.0000	1.5984	1.5984	4.0000e- 005	0.0000	1.5994

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	ī/yr		
Fugitive Dust					0.0754	0.0000	0.0754	0.0387	0.0000	0.0387	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0197	0.2063	0.1696	3.4000e- 004		8.9100e- 003	8.9100e- 003		8.2000e- 003	8.2000e- 003	0.0000	29.9697	29.9697	9.6900e- 003	0.0000	30.2120
Total	0.0197	0.2063	0.1696	3.4000e- 004	0.0754	8.9100e- 003	0.0843	0.0387	8.2000e- 003	0.0469	0.0000	29.9697	29.9697	9.6900e- 003	0.0000	30.2120

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	ſ/yr		
Hauling	3.5000e- 004	0.0117	3.9100e- 003	5.0000e- 005	1.2700e- 003	2.0000e- 005	1.2900e- 003	3.5000e- 004	2.0000e- 005	3.7000e- 004	0.0000	5.2622	5.2622	3.7000e- 004	0.0000	5.2714
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3000e- 004	4.3000e- 004	5.1300e- 003	2.0000e- 005	1.8900e- 003	1.0000e- 005	1.9100e- 003	5.0000e- 004	1.0000e- 005	5.2000e- 004	0.0000	1.5318	1.5318	4.0000e- 005	0.0000	1.5327
Total	9.8000e- 004	0.0122	9.0400e- 003	7.0000e- 005	3.1600e- 003	3.0000e- 005	3.2000e- 003	8.5000e- 004	3.0000e- 005	8.9000e- 004	0.0000	6.7941	6.7941	4.1000e- 004	0.0000	6.8041

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	/yr		
Fugitive Dust					0.0294	0.0000	0.0294	0.0151	0.0000	0.0151	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	0.0197	0.2063	0.1696	3.4000e- 004		8.9100e- 003	8.9100e- 003		8.2000e- 003	8.2000e- 003	0.0000	29.9697	29.9697	9.6900e- 003	0.0000	30.2120
Total	0.0197	0.2063	0.1696	3.4000e- 004	0.0294	8.9100e- 003	0.0383	0.0151	8.2000e- 003	0.0233	0.0000	29.9697	29.9697	9.6900e- 003	0.0000	30.2120

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	/yr		
Hauling	3.5000e- 004	0.0117	3.9100e- 003	5.0000e- 005	1.2700e- 003	2.0000e- 005	1.2900e- 003	3.5000e- 004	2.0000e- 005	3.7000e- 004	0.0000	5.2622	5.2622	3.7000e- 004	0.0000	5.2714
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3000e- 004	4.3000e- 004	5.1300e- 003	2.0000e- 005	1.8900e- 003	1.0000e- 005	1.9100e- 003	5.0000e- 004	1.0000e- 005	5.2000e- 004	0.0000	1.5318	1.5318	4.0000e- 005	0.0000	1.5327
Total	9.8000e- 004	0.0122	9.0400e- 003	7.0000e- 005	3.1600e- 003	3.0000e- 005	3.2000e- 003	8.5000e- 004	3.0000e- 005	8.9000e- 004	0.0000	6.7941	6.7941	4.1000e- 004	0.0000	6.8041

3.5 Building Construction - Utility & Sidewalk - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							МТ	/yr		
Off-Road	0.0676	0.6186	0.6985	1.1600e- 003		0.0301	0.0301		0.0283	0.0283	0.0000	99.6760	99.6760	0.0237	0.0000	100.2688
Total	0.0676	0.6186	0.6985	1.1600e- 003		0.0301	0.0301		0.0283	0.0283	0.0000	99.6760	99.6760	0.0237	0.0000	100.2688

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.5000e- 003	0.0864	0.0260	3.0000e- 004	7.8600e- 003	1.0000e- 004	7.9600e- 003	2.2700e- 003	1.0000e- 004	2.3600e- 003	0.0000	29.0840	29.0840	1.6600e- 003	0.0000	29.1255
Worker	0.0115	7.9100e- 003	0.0933	3.1000e- 004	0.0344	2.5000e- 004	0.0347	9.1500e- 003	2.3000e- 004	9.3700e- 003	0.0000	27.8749	27.8749	6.6000e- 004	0.0000	27.8913
Total	0.0140	0.0943	0.1193	6.1000e- 004	0.0423	3.5000e- 004	0.0426	0.0114	3.3000e- 004	0.0117	0.0000	56.9589	56.9589	2.3200e- 003	0.0000	57.0168

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							МТ	/yr		
Off-Road	0.0676	0.6186	0.6985	1.1600e- 003		0.0301	0.0301		0.0283	0.0283	0.0000	99.6759	99.6759	0.0237	0.0000	100.2687
Total	0.0676	0.6186	0.6985	1.1600e- 003		0.0301	0.0301		0.0283	0.0283	0.0000	99.6759	99.6759	0.0237	0.0000	100.2687

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	'/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.5000e- 003	0.0864	0.0260	3.0000e- 004	7.8600e- 003	1.0000e- 004	7.9600e- 003	2.2700e- 003	1.0000e- 004	2.3600e- 003	0.0000	29.0840	29.0840	1.6600e- 003	0.0000	29.1255
Worker	0.0115	7.9100e- 003	0.0933	3.1000e- 004	0.0344	2.5000e- 004	0.0347	9.1500e- 003	2.3000e- 004	9.3700e- 003	0.0000	27.8749	27.8749	6.6000e- 004	0.0000	27.8913
Total	0.0140	0.0943	0.1193	6.1000e- 004	0.0423	3.5000e- 004	0.0426	0.0114	3.3000e- 004	0.0117	0.0000	56.9589	56.9589	2.3200e- 003	0.0000	57.0168

3.6 Paving - Bikeway Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	/yr		
Off-Road	0.0404	0.3868	0.5364	8.3000e- 004		0.0192	0.0192		0.0177	0.0177	0.0000	72.0658	72.0658	0.0226	0.0000	72.6319
Paving	5.2400e- 003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0456	0.3868	0.5364	8.3000e- 004		0.0192	0.0192		0.0177	0.0177	0.0000	72.0658	72.0658	0.0226	0.0000	72.6319

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0110	0.3809	0.1147	1.3200e-	0.0347	4.4000e-	0.0351	0.0100	4.2000e-	0.0104	0.0000	128.2774	128.2774	7.3200e-	0.0000	128.4605
				003		004			004					003		
Worker	3.2300e-	2.2200e-	0.0262	9.0000e-	9.6500e-	7.0000e-	9.7200e-	2.5600e-	6.0000e-	2.6300e-	0.0000	7.8146	7.8146	1.8000e-	0.0000	7.8192
	003	003		005	003	005	003	003	005	003				004		
Total	0.0142	0.3831	0.1409	1.4100e-	0.0443	5.1000e-	0.0448	0.0126	4.8000e-	0.0131	0.0000	136.0920	136.0920	7.5000e-	0.0000	136.2797
				003		004			004					003		

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							МТ	/yr		
Off-Road	0.0404	0.3868	0.5364	8.3000e- 004		0.0192	0.0192		0.0177	0.0177	0.0000	72.0657	72.0657	0.0226	0.0000	72.6318
Paving	5.2400e- 003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0456	0.3868	0.5364	8.3000e- 004		0.0192	0.0192		0.0177	0.0177	0.0000	72.0657	72.0657	0.0226	0.0000	72.6318

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	ſ/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0110	0.3809	0.1147	1.3200e- 003	0.0347	4.4000e- 004	0.0351	0.0100	4.2000e- 004	0.0104	0.0000	128.2774	128.2774	7.3200e- 003	0.0000	128.4605
Worker	3.2300e- 003	2.2200e- 003	0.0262	9.0000e- 005	9.6500e- 003	7.0000e- 005	9.7200e- 003	2.5600e- 003	6.0000e- 005	2.6300e- 003	0.0000	7.8146	7.8146	1.8000e- 004	0.0000	7.8192
Total	0.0142	0.3831	0.1409	1.4100e- 003	0.0443	5.1000e- 004	0.0448	0.0126	4.8000e- 004	0.0131	0.0000	136.0920	136.0920	7.5000e- 003	0.0000	136.2797

## 3.7 Striping - 2023 Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	/yr		
Archit. Coating	0.0242					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0100e- 003	0.0137	0.0190	3.0000e- 005		7.4000e- 004	7.4000e- 004		7.4000e- 004	7.4000e- 004	0.0000	2.6809	2.6809	1.6000e- 004	0.0000	2.6849
Total	0.0262	0.0137	0.0190	3.0000e- 005		7.4000e- 004	7.4000e- 004		7.4000e- 004	7.4000e- 004	0.0000	2.6809	2.6809	1.6000e- 004	0.0000	2.6849

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e- 004	4.0000e- 004	4.6800e- 003	2.0000e- 005	1.7300e- 003	1.0000e- 005	1.7400e- 003	4.6000e- 004	1.0000e- 005	4.7000e- 004	0.0000	1.3986	1.3986	3.0000e- 005	0.0000	1.3995
Total	5.8000e- 004	4.0000e- 004	4.6800e- 003	2.0000e- 005	1.7300e- 003	1.0000e- 005	1.7400e- 003	4.6000e- 004	1.0000e- 005	4.7000e- 004	0.0000	1.3986	1.3986	3.0000e- 005	0.0000	1.3995

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	ī/yr		
Archit. Coating	0.0242					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0100e- 003	0.0137	0.0190	3.0000e- 005		7.4000e- 004	7.4000e- 004		7.4000e- 004	7.4000e- 004	0.0000	2.6809	2.6809	1.6000e- 004	0.0000	2.6849
Total	0.0262	0.0137	0.0190	3.0000e- 005		7.4000e- 004	7.4000e- 004		7.4000e- 004	7.4000e- 004	0.0000	2.6809	2.6809	1.6000e- 004	0.0000	2.6849

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e- 004	4.0000e- 004	4.6800e- 003	2.0000e- 005	1.7300e- 003	1.0000e- 005	1.7400e- 003	4.6000e- 004	1.0000e- 005	4.7000e- 004	0.0000	1.3986	1.3986	3.0000e- 005	0.0000	1.3995
Total	5.8000e- 004	4.0000e- 004	4.6800e- 003	2.0000e- 005	1.7300e- 003	1.0000e- 005	1.7400e- 003	4.6000e- 004	1.0000e- 005	4.7000e- 004	0.0000	1.3986	1.3986	3.0000e- 005	0.0000	1.3995

# 4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

#### 4.2 Trip Summary Information

	Aver	age Daily Trip I	Rate	Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

#### 4.3 Trip Type Information

		Miles			Trip %			Trip Purpos	e %
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

#### 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.553363	0.042540	0.203692	0.115607	0.014606	0.005830	0.021800	0.032323	0.002120	0.001725	0.004837	0.000711	0.000846

## 5.0 Energy Detail

Historical Energy Use: N

#### 5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MI	/yr		
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

#### 5.2 Energy by Land Use - NaturalGas

<u>Unmitigated</u>

	NaturalGa s Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					ton	s/yr							MT	Г/yr		
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

#### **Mitigated**

NaturalGa	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
3 036					FINITO	FIVITO	TOLAI	F 1V12.5	FIVIZ.J	TOLAI						

Land Use	kBTU/yr					tons/yr						M	Г/yr		
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

## 5.3 Energy by Land Use - Electricity

<u>Unmitigated</u>

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr		M	Г/yr	
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

#### **Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr		M	Г/yr	
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

#### 6.0 Area Detail

#### 6.1 Mitigation Measures Area

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							MT	/yr		
Mitigated	0.0137	0.0000	5.0000e- 005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e- 004	1.0000e- 004	0.0000	0.0000	1.1000e- 004
Unmitigated	0.0137	0.0000	5.0000e- 005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e- 004	1.0000e- 004	0.0000	0.0000	1.1000e- 004

## 6.2 Area by SubCategory

#### <u>Unmitigated</u>

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N20	CO2e
SubCategory					tons	s/yr							MT	/yr		
Architectural Coating	2.4200e- 003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0113					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	5.0000e- 005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e- 004	1.0000e- 004	0.0000	0.0000	1.1000e- 004

Total 0.0137 0.0000 5.0000e- 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1.0000e- 1.0000e- 0.0000 0.0000 1.1	10000-
Total 0.0137 0.0000 5.0000e- 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1.0000e- 1.0000e- 0.0000 0.0000 1.1	10000-
005 004 004	004
	•••

#### **Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr					MT/yr										
Architectural Coating	2.4200e- 003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0113					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	5.0000e- 005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e- 004	1.0000e- 004	0.0000	0.0000	1.1000e- 004
Total	0.0137	0.0000	5.0000e- 005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e- 004	1.0000e- 004	0.0000	0.0000	1.1000e- 004

## 7.0 Water Detail

## 7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category		MT	/yr	
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

## 7.2 Water by Land Use <u>Unmitigated</u>

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal		M	Г/yr	
Other Asphalt Surfaces	0/0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

#### **Mitigated**

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal		M	Г/yr	
Other Asphalt Surfaces	0/0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

## 8.0 Waste Detail

8.1 Mitigation Measures Waste

	Total CO2	CH4	N2O	CO2e
		MT	/yr	
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

## 8.2 Waste by Land Use

<u>Unmitigated</u>

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons		M	Г/yr	
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

#### **Mitigated**

Waste	Total CO2	CH4	N2O	CO2e
Disposed				

Land Use	tons		MT	ſ/yr	
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

## 9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
10.0 Stationary Equipmen	ıt					
Fire Pumps and Emergency G	enerators					
Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
<u>Boilers</u>						
Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type	
User Defined Equipment						-
Equipment Type	Number	]				
11.0 Vegetation						

## **Unmitigated Fuel Conversion - Construction**

	Total CO <sub>2</sub>	Fuel	Factor	
	MT/yr	Туре	KGCO <sub>2</sub> /gal	Gallons
	source: c	alEEMOd		
Demolition	35.94	diesel	10.21	3,520
Site Preparation	33.72	diesel	10.21	3,303
Grading	30.21	diesel	10.21	2,959
ng Construction - Utility and Sidewalk	100.27	diesel	10.21	9,821
Paving - Bikeway Construction	72.63	diesel	10.21	7,114
Striping	2.68	diesel	10.21	263
Total Off-Road Diesel				26,979

Onroad	source:	EMFAC2017	
	Hauling	Vendor	Worker
Demolition	237	-	160
Site Preparation	-	-	182
Grading	454	-	175
ng Construction - Utility and Sidewalk	-	68	3,180
Paving - Bikeway Construction	-	140	891
Striping	-	-	160
	691	208	4,748
Total On-Road Diesel	900		

Total On-Road Gasoline

4,748

#### **Total On-Road Fuel Consumption**

	gal/mile	gal/min
2020Hauling Hauling	0.15613658	1.50968E-05
2020Vendor Vendor	0.12720883	9.12128E-06
2020Worker Worker	0.03742093	2.06198E-06
2021Hauling Hauling	0.15194685	1.49226E-05
2021Vendor Vendor	0.12346263	8.98135E-06
2021Worker Worker	0.03636982	2.00421E-06
2022Hauling Hauling	0.14312318	1.42709E-05
2022Vendor Vendor	0.11698571	8.58941E-06
2022Worker Worker	0.03532451	1.94677E-06
2023Hauling Hauling	0.14107785	1.41309E-05
2023Vendor Vendor	0.11532828	8.40578E-06
2023Worker Worker	0.03445725	1.96264E-06

	Daily	Haul Days	Work Hours	One-Way				Regional Emissions		
Construction Phase	One-Way	per Phase	per Day	Trip Distance	Idling			(ga	illons)	
	Trips			per Day	per Day					
		(days)	(hours/day)	(miles)	(minutes)	gal/mile	gal/min	gal/day	Total Gallons/yr	
Demolition	2023									
Total Haul Trips	74									
Hauling	4	21	8	20	15	0.14	1.41E-05	11	237	
Vendor	0	21	8	6.9	15	0.12	8.41E-06	0	0	
Worker	15	21	8	14.7	0	0.03	1.96E-06	8	160	
Site Preparation	2023									
Total Haul Trips	0									
Hauling	0	20	8	20	15	0.14	1.41E-05	0	0	
Vendor	0	20	8	6.9	15	0.12	8.41E-06	0	0	
Worker	18	20	8	14.7	0	0.03	1.96E-06	9	182	
Grading	2023									
Total Haul Trips	148									
Hauling	7	23	8	20	15	0.14	1.41E-05	20	454	
Vendor	0	23	8	6.9	15	0.12	8.41E-06	0	0	
Worker	15	23	8	14.7	0	0.03	1.96E-06	8	175	
Building Construction - Utility & S	2023									
Total Haul Trips	0									
Hauling	0	86	8	20	15	0.14	1.41E-05	0	0	
Vendor	1	86	8	6.9	15	0.12	8.41E-06	1	68	
Worker	73	86	8	14.7	0	0.03	1.96E-06	37	3,180	
Paving - Bikeway Construction	2023									
Total Haul Trips	0									
Hauling	0	88	8	20	15	0.14	1.41E-05	0	0	
Vendor	2	88	8	6.9	15	0.12	8.41E-06	2	140	
Worker	20	88	8	14.7	0	0.03	1.96E-06	10	891	
Striping	2023									
Total Haul Trips	0									
Hauling	0	21	8	20	15	0.14	1.41E-05	0	0	
Vendor	0	21	8	6.9	15	0.12	8.41E-06	0	0	
Worker	15	21	8	14.7	0	0.03	1.96E-06	8	160	

#### Construction Energy Analysis Construction Water Energy Estimates

Source	Acres	Construction Water Use per Day (Mgal)	Days of Water Use	Total Construction Water Use (Mgal)	Total Electricity Demand from Water Demand (MWh)
Project Site	4	0.012	43	0.516	6.7
CalEEMod Water Electricity Factors		Electricity Intensity Factor To Supply (kWh/Mgal)	Electricity Intensity Factor To Treat (kWh/Mgal)	Electricity Intensity Factor To Distribute (kWh/Mgal)	Electricity Intensity Factor For Wastewater Treatment (kWh/Mgal)
		9727	111	1272	1911

Sources and Assumptions:

-Electricity Intensity Factors - California Emissions Estimator Model (CalEEMod).

-Estimated construction water use assumed to be generally equivalent to landscape irrigation, based on a factor of 20.94 gallons per year per square foot of

landscaped area within the Los Angeles area (Mediterranean climate), which assumes high water demand landscaping materials and an irrigation system efficiency of 85%.

Factor is therefore (20.94 GAL/SF/year) x (43,560 SF/acre) / (365 days/year) / (0.85) = 2,940 gallons/acre/day, rounded up to 3,000 gallons/acre/day.

(U.S. Department of Energy, Energy Efficiency & Renewable Energy, Federal Energy Management Program. "Guidelines for Estimating Unmetered Landscaping Water Use."

July 2010. Page 12, Table 4 - Annual Irrigation Factor – Landscaped Areas with High Water Requirements).
## Appendix B Natural Environment Study



### Peters Canyon Bikeway Extension Project Natural Environment Study

(Minimal Impacts)

Peters Canyon Bikeway Extension Project

Orange County, California

Caltrans District 12 – County of Orange

CML-5995 (115)

#### January 2021

STATE OF CALIFORNIA Department of Transportation County of Orange

Prepared By:

Scott Holbrook, Principal Ecologist and Douglas Gordon-Blackwood, Senior Biologist (949) 753-7001 ESA | Environmental Science Associates 2121 Alton Parkway, Suite 100, Irvine, CA 92606

Prepared By:

Date: \_\_\_\_\_

Date: 1/15/2021

May Duong, Project Manager (714) 667-9693 Orange County Public Works 601 N. Ross St., Santa Ana, CA 92703

Approved By:

Date:

Lisa Sato, District Biologist (424) 436-7032 California Department of Transportation, Division of Environmental Analysis Caltrans District 12

Approved By:

Charles Baker, Environmental Branch Chief (657) 328-6139 California Department of Transportation, Division of Environmental Analysis Caltrans District 12

#### **Table of Contents**

1.	Introduction1				
	1.1	Projec	t History	1	
		1.1.1	Project Purpose and Need	1	
	1.2	Projec	t Description	1	
2.	Stud	y Meth	ods	5	
	2.1	Regula	atory Requirements	5	
		2.1.1	Federal Regulations and Standards	5	
		2.1.2	State Regulations and Standards	6	
	2.2	Studie	s Required	8	
		2.2.1	Literature Search	8	
		2.2.2	Field Reviews	8	
	2.3	Persor	nnel and Survey Dates	9	
	2.4	Aaenc	v Coordination and Professional Contacts	. 10	
	2.5	Limitat	tions That May Influence Results	. 10	
3.	Resi	ults: Er	vironmental Setting	. 12	
	3.1	Descri	ption of the Existing Physical and Biological Conditions	. 12	
	-	3.1.1	Study Area	. 12	
		3.1.2	Physical Conditions	. 13	
		3.1.3	Biological Conditions	. 13	
		3.1.4	Habitat Connectivity	. 13	
	3.2	Regio	nal Species and Habitats and Natural Communities of Concern	. 14	
		3.2.1	Special-Status Plants	. 14	
		3.2.2	, Special-Status Wildlife	. 16	
		3.2.3	Regional Habitats and Natural Communities of Concern	. 18	
4.	Resi	ults: Bic	ological Resources, Discussion of Impacts, and Mitigation	. 19	
	4.1	Habita	ts and Natural Communities of Special Concern	. 19	
	4.2	Natura	al Communities and Other Vegetation Types	. 20	
		4.2.1	Upland Plant Communities	. 20	
		4.2.2	Riparian Plant Communities	.23	
		4.2.3	Developed and Disturbed Areas	.24	
	4.3	Projec	t Impacts	.25	
	4.4	Avoida	ance and Minimization Efforts/Compensatory Mitigation	. 28	
		4.4.1	NCCP/HCP Compensatory Mitigation	. 29	
		4.4.2	Mitigation for Temporary Impacts in the NCCP/HCP Reserve	. 29	
		4.4.3	Avoidance and Minimization Measures to Reduce Indirect Impacts	. 33	
	4.5	Specia	al Status Plant Species	. 33	
		4.5.1	Discussion of Plant Species / Survey Results	. 33	
		4.5.2	Project Impacts	. 34	
		4.5.3	Avoidance and Minimization Efforts/Compensatory Mitigation	. 35	

	16	Special Status Animal Species	35
	<del>-</del> .0	4.6.1 Coastal California Chatcatcher	
		4.0.1 Coastal California Grateatorier	
		4.6.3 Other Special-Status Wildlife Species	
		4.6.4 Bird Species Protected Under the MBTA and CFGC	
5.	Con	clusions and Regulatory Determinations	
	5.1	Federal Endangered Species Act Consultation Summary	40
	5.2	Essential Fish Habitat Consultation Summary	41
	5.3	Wetlands and Other Waters Coordination Summary	
	5.4	Invasive Species	
	5.5	Migratory Bird Treaty Act	
6.	Refe	erences	
7.	Appe	endices	
APP	ENDI	IX A – CNPS and CNDDB Lists	A-1
APP	ENDI	IX B – USFWS Species List	B-1
APP	ENDI	IX C – NMFS Species List	C-1
APP	ENDI	IX D – Sensitive Plant Species Potential to Occur	D-1
APP	ENDI	IX E – Sensitive Wildlife Species Potential to Occur	E-1
APP	ENDI	IX F – Floral and Faunal Compendia	F-1
APP	ENDI	IX G – Site Photos	G-1

#### List of Figures

Figure 1: Regional Location	2
Figure 2: Vicinity Map	3
Figure 3: Vegetation and Land Use	
Figure 4: NCCP / HCP Reserve Areas Overlay	

#### List of Tables

Table 1: Federally-Listed Species Noted in USFWS and NMFS Lists	11
Table 2: Federal and/or State Listed Special-Status Plant Species Considered	15
Table 3: Federal and/or State Listed Wildlife Species Considered.	16
Table 3A: Project Impacts to Vegetation Communities and Land Cover Types in or	
Adjacent to Peters Canyon Regional Park	27
Table 3B: Project Impacts to Vegetation Communities and Land Cover Types Adjacent	
to Vidorra Residential Area (Away from Regional Park)	28
Table 4: Detemination of Project Effects on Federally-Listed Species	41

#### 1. Introduction

Orange County Public Works (OCPW), as the lead agency under the California Environmental Quality Act (CEQA), has identified the need for the Peters Canyon Bikeway Extension Project (Proposed Project or Project). The Project Site extends along Jamboree Road and Pioneer Road, with the northern extent located at the intersection of Jamboree Road and Canyon View Avenue (located in the City of Orange) to the southern extent at the intersection of Pioneer Road and Pioneer Way (located in the City of Tustin), as shown in Figure 1 and Figure 2.

The Project would construct a new shared-use (Class 1) path that would extend the Peters Canyon Trail to the existing bikeway at the intersections of Jamboree Road with Canyon View Avenue and a Class 2 buffered bike lane on Pioneer Road with Pioneer Way in the cities of Orange and Tustin. The Proposed Project closes a critical gap in the County's existing bikeway network, which will enhance bicyclists' safety and comfort. The Project would provide a continuous bike and pedestrian route that connects to the Cedar Grove Park, Pioneer Road Park, Peters Canyon Regional Park, Santiago Canyon College, Peters Canyon Elementary School, and neighborhoods along Jamboree Road and Pioneer Road.

#### 1.1 Project History

In November 2019, staff at Orange County Public Works (OCPW) completed a Project Programming Report for the Proposed Project. Based on the initial research and preliminary feasibility study performed, the report found that this gap closure project would provide a continuous bike and pedestrian route that connects to Jamboree Road, Pioneer Road, Peters Canyon Regional Park, and the Santiago Canyon Area. When complete, this regional corridor will be approximately 14 miles long from Yorba Linda to Newport Beach, encompassing a bike path and pedestrian facility. Within a quartermile, this regional corridor would ultimately serve approximately 116,000 residents, 9 schools, and 8 parks. The Programming Project Development team recommended that the Proposed Project would be beneficial for the community and recommended the project to proceed into the Design Phase to be finalized and constructed.

#### 1.1.1 Project Purpose and Need

The proposed bikeway extension would create a safe cycle lane, starting at Canyon View Avenue and following Jamboree Road for approximately 1.2 miles, before continuing on Pioneer Road for a further 1.5 miles. As noted above, the Project would close a critical gap in the County's existing bikeway network by linking to the existing Peters Canyon Trail, which will enhance bicyclists' safety and comfort.

#### 1.2 Project Description

The Proposed Project consists of a total of approximately 2.7 miles of a Class 1 shareduse path and buffered Class 2 bike lane. The proposed off-street paved Class 1 shareduse path would begin on the west side of Jamboree Road from Canyon View Avenue to Pioneer Road, then a buffered Class 2 bike lane would continue along both sides of Pioneer Road from Jamboree Road to Pioneer Way.



SOURCE: Mapbox Streets, 2020.

Peters Canyon Bikeway Extension Project

Figure 1 Regional Location Map

ESA



SOURCE: USGS Topographic Series (Orange, Black Star Canyon, CA).

ESA

Peters Canyon Bikeway Extension Project

#### **Jamboree Road Improvements**

Implementation of the Proposed Project would include demolition of the existing sidewalk along the west side of Jamboree Road, and the relocation of utilities such as water meters, high voltage electrical cabinets, pull boxes, valve boxes, irrigation systems, concrete V-ditches, fire hydrants, catch basins, and removal of mature nonnative landscape trees along the west side of Jamboree Road. It is anticipated that all conflicting surface utilities facilities will be relocated within the existing parkway space. In its place, a 1.2-mile-long 12-foot wide Class 1 paved shared-use path constructed along the west side of Jamboree Road. The existing Class 2 bike lanes and existing street lighting within Jamboree Road would remain in place.

In addition, a retaining wall will be constructed where the Class 1 shared-use path will encroach into the cut slopes adjacent to Peters Canyon Regional Park. The existing retaining wall near the Santiago Aqueduct Commission/Metropolitan Water District of Southern California facilities would be protected in place and the Class 1 path reduced in width. The proposed retaining wall would be approximately 3 to 5 feet in height and extend from the existing retaining wall approximately 3,340 linear feet to the south, and would incorporate drainage V-ditches. Further improvements along Jamboree Road would include the removal of existing retaining curbs and sand bags along the west side of Jamboree Road.

The Project would include the installation of a pedestrian fence along the west side of Jamboree Road. The pedestrian fence would serve to maintain a safe barrier along the existing roadway edge to separate the Class 1 shared-use path off the road from the vehicle travel lanes rand Class 2 bikeway in the roadway.

#### **Pioneer Road Improvements**

Project improvements along Pioneer Road would include signing and striping to delineate the proposed Class 2 buffered bike lanes. The existing parkway, sidewalk, and landscaping, would remain intact. The Class 2 buffered bike lanes would be incorporated within the existing 8-foot bike lanes, one in each direction of the road.

#### **Other Improvements**

The Proposed Project would include intersection improvements at Jamboree Road and Pioneer Road to connect the proposed Class 2 buffered bike lanes to the existing trails on the south, and to the proposed Class 1 shared-use path to the existing Class 1 path on the north, along the west side of Jamboree Road.

Bike path and bike lane wayfinding signage would be installed throughout the Project Site to guide users of the new bikeway alignment.

In addition, landscaping improvements would be needed along Jamboree Road, where the Class 1 shared-use path is separated from the existing roadway curb.

#### 2. Study Methods

ESA Staff Biologist Douglas Gordon-Blackwood conducted a review of pertinent literature and online database searches for special-status species information, and reviewed topographic mapping and recent aerial photography. A reconnaissance-level biological field survey was conducted on June 29, 2020. ESA biologist Karla Flores and ecologist Scott Holbrook also conducted pre-activity nesting bird clearance surveys in late June and mid-July of 2020 in natural areas along Jamboree Road prior to geotechnical drilling activities. Biological monitoring was also conducted during drilling activities on July 21, 22, and 24, 2020.

Field surveys focused on the area potentially subject to project effects as determined from initial engineering design, plus an additional 200-foot survey buffer. The survey buffer was taken to be sufficient to identify and determine direct, indirect, and cumulative effects to sensitive biological resources associated with this Project.

#### 2.1 Regulatory Requirements

The descriptions below provide a brief overview of agency regulations that may be applicable to resources that occur within the Biological Study Area (BSA) of the proposed Project, and their respective requirements. The final determination of whether permits are required is made by the regulating agencies. The project will be conducted within a narrow strip along a busy arterial roadway which lies directly adjacent to natural open space containing habitat within a Regional Park and within a designated Reserve area. Therefore, it is important to understand the regulatory framework and applicable requirements in the context of the Proposed Project.

#### 2.1.1 Federal Regulations and Standards

#### Federal Endangered Species Act (FESA)

Enacted in 1973, FESA provides for the conservation of threatened and endangered species and their ecosystems. The FESA prohibits the "take" of threatened and endangered species except under certain circumstances and only with authorization from USFWS through a permit under Section 4(d), 7 or 10(a) of the FESA. "Take" under the FESA is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Formal consultation with USFWS under Section 7 of the FESA would be required if the Project had the potential to affect a federally-listed species that has been detected within or adjacent to the Project's components.

#### Migratory Bird Treaty Act (MBTA)

Congress passed the MBTA in 1918 to prohibit the kill or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA. The prohibition applies to birds included in the respective international conventions between the United States and Great Britain, the

United States and Mexico, the United States and Japan, and the United States and Russia. No permit is issued under the MBTA; however, the Project would need to employ measures that would avoid or minimize effects on protected migratory birds.

#### Clean Water Act (CWA)

Under Section 404 of the CWA, the Corps regulates the discharge of dredged or fill material into jurisdictional waters of the U.S., which include those tidal and non-tidal waters listed in 33 CFR 328.3 (Definitions) (U.S.C. Title 33, Chapter 26, Sections 101–607). Section 401 of the CWA requires a water quality certification from the state for all permits issued by the Corps under Section 404 of the CWA. RWQCB is the state agency in charge of issuing a CWA Section 401 water quality certification or waiver.

#### 2.1.2 State Regulations and Standards

#### California Fish and Game Code (CFGC)

CFGC regulates the taking or possession of birds, mammals, fish, amphibians, and reptiles, as well as impacts to natural resources such as wetlands and waters of the state. It includes the California Endangered Species Act (CESA) (Sections 2050–2115) and Lake and Streambed Alteration Agreement (LSAA) regulations (Section 1600 et seq.).

Wildlife "take" is defined by CDFW as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Protection extends to the animals, dead or alive, and all their body parts. Section 2081 of CESA allows CDFW to issue an incidental take permit for state-listed threatened or endangered species, should the proposed Project have the potential to "take" a state listed species that has been detected within or adjacent to the Project. Certain criteria are required under CESA prior to the issuance of such a permit, including the requirement that impacts of the take are minimized and fully mitigated.

Under CFGC Section 1600 et seq., CDFW's jurisdiction extends over the bed, bank, or channel of a river, stream, or lake for activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. Substantially diverting or obstructing the natural flow or substantially changing the bed, channel or bank of any river, stream, or lake resulting in a substantial effect on a fish or wildlife resource requires notification to the CDFW and completion of the LSAA process. CDFW jurisdiction encompasses the physical bed and bank of the channel, as well as all associated riparian vegetation.

#### Porter-Cologne Water Quality Control Act

In addition to having principle authority to issue a CWA Section 401 water quality certification or waiver, the RWQCB, under Section 13000 et seq., of the Porter-Cologne Act, is the agency that regulates discharges of waste and fill material within any region that could affect a water of the state (California Water Code [CWC] 13260[a]), (including wetlands and isolated waters) as defined by CWC Section 13050(e). The RWQCB has

the authority to issue Waste Discharge Requirements (WDR), pursuant to Porter-Cologne, for impacts to isolated waters of the State, including isolated wetlands.

### Orange County Central and Coastal Subregion Natural Community Conservation Plan and Habitat Conservation Plan (NCCP/HCP)

The NCCP/HCP (County of Orange 1996a) was prepared by the County of Orange in cooperation with California Department of Fish and Game (CDFG, now CDFW) and USFWS. The document was prepared in accordance with the provisions of the state Natural Community Conservation Planning Act of 1991 (NCCP Act), Sections 1600 et seq. of the CFGC and FESA. The Central and Coastal Sub-region is part of a five-county NCCP Study Area established by the state as part of the Southern California Coastal Sage Scrub NCCP Program. The Project falls within the Central Sub-region of the NCCP/HCP.

In addition, a Joint Programmatic Environmental Impact Report and Environmental Impact Statement (Joint EIR/EIS) (County of Orange 1996b) that addresses the effects related to the NCCP/HCP was prepared in accordance with the California Environmental Quality Act (CEQA), and the National Environmental Policy Act (NEPA).

The NCCP/HCP focuses on creating a multiple-species, multiple-habitat sub-regional Reserve System and implementing a long-term "adaptive management" program that will protect coastal sage scrub and other habitats and species located within the coastal sage scrub habitat mosaic, while providing for economic uses that will meet the social and economic needs of the people of the sub-region. The primary goal is to protect and manage habitat supporting a broad range of plant and animal populations that are found within the Central and Coastal sub-regions of Orange County. To accomplish this goal, the NCCP/HCP creates a sub-regional habitat Reserve System for coastal sage scrub and related habitats, and implements a program that manages biological resources within the habitat reserve. The Reserve System would be established by incorporating existing parklands and open space and additional dedications that would occur over 25 years or more.

Two categories of landowners are identified by the NCCP/HCP including, *participating landowners* and *non-participating landowners*. Each of these landowner categories is offered different endangered species habitat mitigation opportunities under the NCCP/HCP. Participating landowners, such as the County, are those public and private landowners contributing significant land and/or funding toward implementation of the Reserve System and adaptive management program. For participating landowners, development activities and uses that are addressed by the NCCP/HCP are considered fully mitigated under the NCCP Act, and FESA and CESA for impacts to habitat occupied by listed and other species "identified" by the NCCP/HCP (County of Orange 1996a).

The Reserve System is designed to focus on protecting and conserving coastal sage scrub habitats and various associated species including three designated "target species": coastal California gnatcatcher, coastal cactus wren, and orange throated

whiptail lizard. However, the Reserve System's design actually provides protection for a much broader range of habitats and species than just coastal sage scrub and the three target species. Oak woodlands, Tecate cypress forest, cliff and rock, and within the Coastal Subarea only, chaparral, are regulated as "Covered Habitats," while thirty-nine plant and wildlife species are regulated as "Identified Species" under the NCCP/HCP. Most of the Identified Species are not presently listed under FESA or CESA, but are treated under the NCCP/HCP as if listed. Under the NCCP/HCP, regulatory coverage means that Incidental Take of "target and identified" species will be authorized permitted for new development (planned activities) addressed by the NCCP/HCP, and that no additional habitat mitigation for such Incidental Take under CESA and FESA would be required by local, state or federal agencies over and above the mitigation provided for by the NCCP/HCP (County of Orange 1996a).

#### 2.2 Studies Required

#### 2.2.1 Literature Search

Prior to conducting field surveys, a database review was conducted for the USGS Orange guadrangle, within which the proposed project occurs. Information reviewed included the California Natural Diversity Database (CNDDB 2020) and the California Native Plant Society's (CNPS) on-line Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2020). The CNDDB and CNPS lists are included in Appendix A. An on-line request for a list from USFWS of federally-listed species that may occur or may be affected by the Project and with critical habitat that coincides with the Project was completed on August 20, 2020 (USFWS). The USFWS species list is included in Appendix B. A review of the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) database was gueried on July 6, 2020 to obtain a list of federally-listed species under the jurisdiction of NMFS. The NMFS species list for the 7.5 minute USGS guadrangle map for Orange is included in Appendix C. Additionally, the NCCP/HCP was reviewed for "Identified Species". Combined, the plant and wildlife species and natural vegetation communities identified during a review of these resources represent the list of "special-status" species and communities known from the Project region.

#### 2.2.2 Field Reviews

Surveys of the extended BSA (including the segment that extends along Pioneer Road, which would be subject to restriping and no other construction) were performed to assess biological resources and determine the potential for occurrence of common and special-status species, their habitats, and aquatic resources. Further clarification regarding the identification of the extended BSA versus the refined BSA is provided below in Section 3.1, Study Area. Reconnaissance and pedestrian-based habitat assessment surveys of the refined BSA (limited to the segment along Jamboree where construction activity is proposed) were completed to assess general and dominant vegetation types, plant community sizes, habitat types, and species present. Vegetation classification of plant communities were derived from criteria and definitions according to Holland (1986), with cross references to habitats according to Sawyer et al. (2009).

Dominant plant species were identified to the lowest taxonomic level sufficient to support the classification of plant communities occurring in the refined BSA along Jamboree Road. Vegetation communities and land use were mapped within Collector for ARC GIS utilizing a hand held GPS with meter accuracy.

Wildlife observations were documented during field surveys. The presence of a wildlife species was determined through direct observation and/or wildlife sign (e.g., tracks, burrows, nests, scat, or vocalization).

The extended BSA was assessed for its potential to support special status species based on reported habitat preferences and historical occurrences of species within the region (Baldwin et al. 2012; CNDDB 2020; CNPS 2020; Sawyer et al. 2009; USFWS 2019). Definitions for the potential for occurrence were utilized based on Caltrans Standard Environmental Reference (Caltrans 2013) and are presented below. The location of special-status species records in the CNDDB and CNPS in relation to the project area, and the age of the record, were also considered to refine the potential for each species' to occur in the project vicinity.

#### 2.3 Personnel and Survey Dates

Field surveys of the extended BSA were conducted by Douglas Gordon-Blackwood on June 29, 2020 and biologist Karla Flores and ecologist Scott Holbrook also conducted pre-activity nesting bird clearance surveys prior to geotechnical drilling activities and performed biological monitoring within the refined BSA during drilling activities on July 21, 22, and 24, 2020. A brief description of the biological experience of the ESA biologists who conducted the field surveys and/or contributed to report preparation for the Project follows.

Mr. Gordon-Blackwood has 9 years of experience as a wildlife biologist and botanist. He has experience in conducting habitat assessments and focused surveys in Orange, Riverside, Los Angeles, San Diego, and San Bernardino counties for special-status species applicable to this Project, such as coastal California gnatcatcher, least Bell's vireo, and many rare plants. Mr. Gordon-Blackwood is also a certified arborist with the International Society of Arboriculture and a Registered Consulting Arborist with the American Society of Consulting Arborists.

Mr. Holbrook is a consulting biologist/ecologist with over 29 years of experience in biological resources and habitat restoration. During his career he has conducted or supervised biological surveys and mapping of plant communities, jurisdictional areas and wildlife throughout Southern California. Scott has extensive experience preparing technical documentation for California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) analyses of biological resources impacts for projects ranging from large transportation, infrastructure, utilities, and residential communities to small, private developments.

Ms. Flores is a field biologist with a strong background in southern California ecosystems and has conducted plant and wildlife surveys in coastal sage scrub,

chaparral, and desert plant communities for over 7 years. She is experienced using GIS products such as ArcMap, Collector and Survey 123. Karla has attended California Native Plant Society (CNPS) workshops for vegetation mapping, emergent invasive plants, and CEQA impact analysis assessments as well as The Wetland's Institute's workshop on Wetland Delineation.

#### 2.4 Agency Coordination and Professional Contacts

Coordination with OCPW occurred prior to and during the preparation of the NES(MI) and included the transfer of project related materials such as design drawings and project descriptions. On July 1, 2020, OC Parks Natural Resources Program Coordinator, Ms. Alisa Flint, attended a site meeting with Ms. May Duong, OCPW project manager, and Mr. Holbrook, the project senior biologist/ecologist with ESA to review the project and inspect planned geotechnical work areas. Additional coordination also occurred between OCPW staff and Mr. Will Miller, representing the U.S. Fish and Wildlife Service and Kyle Rice from CDFW, regarding the mapping of the NCCP/HCP Reserve and how the prior construction of Jamboree Road was addressed or recognized that mapping.

A request was submitted to USFWS to provide a list of endangered, threatened, proposed, or candidate species listed under FESA that may be affected by the Project. On July 17, 2020 a response was received via USFWS's Information for Planning and Consultation (IPaC) on-line environmental review process (USFWS 2020) identifying 15 listed species that may occur in the vicinity of the Project and/or could potentially be directly or indirectly affected by the Project. Additionally, a species list was generated on July 6, 2020 following NMFS's on-line California Species List Tools (NMFS 2020), which identified one additional federally-listed species. A table of the federally-listed species included in the USFWS and NMFS species lists is provided in Table 1 below.

#### 2.5 Limitations That May Influence Results

All areas within the extended BSA (including the segment along Pioneer Road) were open to observation except private residential properties. Survey and supplemental site visits were conducted in summer thus limiting opportunity to see spring annual plant species. However, as the focus area where direct project effects may occur is limited to a relatively narrow strip of land directly adjacent to a road and sidewalk with easy access, surveys are considered adequate to identify special status species and potentially suitable habitat.

Common Name	Scientific Name	Status	Critical Habitat Present?					
Plants								
Verbesina dissita	big-leaved crownbeard	FT	No; No critical habitat has been designated					
Dudleya stolonifera	Laguna Beach liveforever	FT	No; No critical habitat has been designated					
	Insec	t						
Euphydryas editha quino	Quino checkerspot butterfly	FE	No; No critical habitat located within BSA					
	Brachio	oods						
Branchinecta sandiegonensis	San Diego fairy shrimp	FE	No; No critical habitat has been designated					
Streptocephalus woottoni	Riverside fairy shrimp	FE	No; No critical habitat has been designated					
	Fish	1						
Catostomus santaanae	Santa Ana sucker	FT	No; No critical habitat located within BSA					
Oncorhynchus mykiss	Southern California steelhead	FE	No; No critical habitat located within BSA					
	Amphib	ians						
Anaxyrus californicus	arroyo toad	FE	No; No critical habitat located within BSA					
	Bird	S						
Sterna antillarum browni	California least tern	FE	No; No critical habitat has been designated					
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FT	No; No critical habitat has been designated					
Polioptila californica californica	coastal California gnatcatcher	FT	No; species detected in BSA. Covered under					
			NCCP/HCP. No critical habitat located within BSA					
Vireo bellii pusillus	least Bell's vireo	FE	No; species was detected nearby but no critical					
			habitat on site or in the vicinity.					
Rallus longirostris levipes	light-footed Ridgway's rail	FE	No; No critical habitat has been designated					
Empidonax traillii extimus	southwestern willow flycatcher	FE	No; No critical habitat located within BSA					
Charadrius nivosus nivosus	western snowy plover	FT	No; No critical habitat located within BSA					
	Mamm	als						
Perognathus longimembris pacificus	pacific pocket Mouse	FE	No; No critical habitat has been designated					

#### Table 1: Federally-Listed Species Noted in USFWS and NMFS Lists

FE: Federally Endangered, FT: Federally Threatened

#### 3. Results: Environmental Setting

Jamboree Road is a 120-foot wide major arterial roadway in the cities of Tustin and Orange in north central Orange County and has a posted speed limit of 55 miles per hour. Natural open space areas occur on both sides of Jamboree Road. The 340-acre Peters Canyon Regional Park lies adjacent to the west side of Jamboree Road along a 0.9-mile segment from Canyon View Avenue southward to the Vidorra residential housing area. This residential area abuts Jamboree Road along a quarter mile-long segment stretching north from Pioneer Road. The southern section of Jamboree Road, north of the Pioneer Road intersection is landscaped with street trees. The open space areas northward from the residential area on either side of Jamboree Road exhibit mild to moderate slopes dominated mainly by natural upland vegetation with a few patches of woody riparian vegetation also present near Canyon View Avenue.

Several drainages or drainage swales occur that discharge into Peters Canyon Regional Park near the north end of the Proposed Project which were inspected on February 21, 2020, by OCPW Senior Environmental Resources Specialist, Giles Matthews, to determine if these features could be characterized as State and/or federal jurisdictional waters. Several features were identified as potential Waters of the US and/or State but Mr. Matthews determined that at no point would the Proposed Project (as it was then understood) be expected to intercept any of these features.

Within the study area, Jamboree Road has two lanes of traffic in each direction, with a 30foot wide landscaped median, a 7-foot wide Class 2 bike lane on both sides, and a 6-foot wide sidewalk on the west side. The roadway grade varies from approximately 3.5 percent to 6 percent. There are several water meters, high voltage electrical cabinets, pull boxes, valve boxes, irrigation systems, concrete V-ditches, fire hydrants, catch basins, and mature trees along the west side of Jamboree Road. In addition, an approximately 300-foot long retaining wall is located along the west side of Jamboree Road near the Santiago Aqueduct Commission/Metropolitan Water District of Southern California facilities.

Pioneer Road is a 68-foot wide divided collector road in the City of Tustin with a posted speed limit varying from 25 to 40 miles per hour. Pioneer Road has one lane of traffic in each direction, and a two-way left turn. In addition, Pioneer Road has a 7-foot wide sidewalk and an 8-foot wide Class 2 bike lane on both sides. Pioneer Road's roadway grade is approximately 4 percent.

#### 3.1 Description of the Existing Physical and Biological Conditions

#### 3.1.1 Study Area

For this study, since the project would involve activities along a relatively narrow strip of land to extend a pathway for bikes and pedestrians, the BSA includes a broad strip reaching out 200 feet from the approximate work area limits along the 1.2-mile length of the project along Jamboree Road. The original "extended" BSA also included the segment of the Proposed Project along Pioneer Road as well as the segment along

Jamboree Road. After the first biological survey, it was determined that the work on the Pioneer Road segment would be limited to restriping of the Pioneer Road pavement and that no construction activities are proposed through this residential area. Therefore, the BSA for the project was refined and reduced to just the strip along the 1.2-mile segment along Jamboree Road since that covers the entire area where the project could potentially affect biological resources. Re-striping of an active roadway within a completely developed suburban area constitutes no more activity than normal road maintenance and would not be expected to result in any potentially significant effects on biological resources. The location and configuration of the original extended BSA is depicted on Figure 2 and the refined BSA, that contains all areas subject to project construction is identified on Figure 3.

#### 3.1.2 Physical Conditions

The BSA includes the traffic lanes comprising Jamboree Road, along with the sidewalk, utility boxes, and lighting. Natural open space occurs on either side of the roadway for approximately 0.9 mile from north to south, with residential housing and landscape trees on the west side for the last 0.25 mile down to Pioneer Road and both natural areas and landscaping on the east side (Figure 3). Jamboree Road and the fairly heavy traffic it carries exposes the proposed project area and the adjacent BSA to noise, night lighting, dust, and vehicle emissions, and roadway maintenance activities on a regular basis. Topography in the BSA ranges in elevation from 250 to 610 feet above mean sea level.

#### 3.1.3 Biological Conditions

The BSA occupies both natural landscapes, a segment of a major road, and some residential settings in foothills of the Santa Ana Mountains and lies along the northeast edge of the Peters Canyon Regional Park. The landscape on either side of Jamboree Road is primarily composed of native vegetation communities, including patches of willow scrub near the north end, with coastal sage scrub habitat covering most of the remaining natural area, and with some ornamental vegetation, including mostly non-native street trees along both sides of Jamboree Road. The Vidorra residential community and associated landscaping lies along the west side of Jamboree Road for approximately a quarter-mile –long segment just north of Pioneer Road. Despite some potentially reduced wildlife activity in the immediate vicinity of the main road, the natural undeveloped areas in the BSA are considered suitable habitat for many common wildlife and plant species and could also be suitable for a few special-status plants and animals.

#### 3.1.4 Habitat Connectivity

The Proposed Project lies at or near the edge of the urban and wildlands interface where development in the cities of Orange and Tustin comes up to the natural open space in the foothills of the Santa Ana Mountains. Most of the foothills and the Santa Ana Mountain range that lie to the north and east of the BSA are undeveloped and contain various native plant communities that afford suitable habitat for many species of wildlife, including some special-status species. Much of this undeveloped area occurs within the Cleveland National Forest, and other areas are owned and/or managed by Orange County as regional park space. To the west and southwest of the project lies the sole natural open space which is Peters Canyon Regional Park. The project lies along Jamboree Road which, along with the Foothill Toll Road (State Route 261) just east of the project area, forms a hazardous semi-obstruction for terrestrial species that may seek to access Peters Canyon Regional Park from the foothills to the east, or vice versa. However, avian species and windblown seed are not much obstructed by these two roadways. Therefore, the project alignment is situated within a habitat area and in a landscape linkage and along one of the terrestrial roadways that poses a risk to some wildlife seeking to utilize the available habitat connectivity between the Park and the much larger open space area to the east.

The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. Wildlife corridors link together areas of suitable habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The BSA does not represent a corridor for wildlife movement to and from adjacent sites since it primarily follows Jamboree Road. As noted above, it may be perceived as lying partially within a habitat area and along a terrestrial hazard that makes that habitat riskier to access by terrestrial wildlife that may cross Jamboree Road at grade. It may be noted that there is at least one below ground culvert crossing opportunity associated with Handy Creek. In any case, the proposed bikeway extension project will not significantly change or add additional barrier to wildlife movement in or through the habitat area (Peters Canyon Regional Park and NCCP Reserve) or between this habitat area and the local foothills and mountains.

The Project site is not within any linkages identified by the South Coast Missing Linkages report; the nearest linkage design identified is for the Santa Ana-Palomar Connection located approximately 12 miles southeast of the Project Site (South Coast Wildlands 2008).

#### 3.2 Regional Species and Habitats and Natural Communities of Concern

#### 3.2.1 Special-Status Plants

The CNDDB (2020) and CNPS (2020) database for the USGS Orange quadrangle and the eight surrounding 7.5 min quadrangle maps, and the USFWS (2020) species list, list a total of sixty-seven (67) special-status plant species in the region, of which nine are also listed as "Identified Species" in the NCCP/HCP. Twelve of the 67 regional species identified during the database reviews are federally and/or state listed as endangered or threatened. The status and habitat requirements for the 12 listed species are presented in Table 2 below. Status, habitat requirements, and the potential for each of the 67 special-status plant species noted in the database search to occur within the BSA are provided in Appendix D. Marginally suitable habitat for only three of these species: Braunton's milk-vetch, thread-leaved brodiaea, and San Fernando Valley spineflower, occurs in the BSA, and the spineflower is presumed to have been extirpated in Orange County.

Table 2: Fe	deral and/or State	Elisted Special-S	tatus Plant Species	Considered.
-------------	--------------------	-------------------	---------------------	-------------

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent <sup>1</sup>	Potential to Occur and Rationale
Astragalus brauntonii	Braunton's milk-vetch	FE/CRPR 1B.1	Chaparral, coastal scrub, valley and foothill grassland. Recent burns or disturbed areas; usually on sandstone with carbonate layers. Soil specialist; requires shallow soils to defeat pocket gophers and open areas, preferably on hilltops, saddles or bowls between hills. 3-640 m.	Habitat Present	Not Expected. Species not observed during survey. One record near Irvine Lake. Other records in OC from Santa Ana Mountains. Soils not present.
Brodiaea filifolia	thread-leaved brodiaea	FT/SE/CRPR 1B.1	Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools. Usually associated with annual grassland and vernal pools; often surrounded by shrubland habitats. Occurs in openings on clay soils. 15-1030 m.	Habitat Present	Absent. Species not observed during survey. Historic disturbance in BSA limits PTO. Nearest record: Whiting Ranch Wilderness Park >5mi distant.
Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	FE/SE/ CRPR 1B.2	Marshes and swamps, coastal dunes. Limited to the higher zones of salt marsh habitat. 0-10 m.	Absent	Not Expected: Habitats preferred by this species are generally absent from the BSA
Chorizanthe parryi var. fernandina	San Fernando Valley spineflower	SE/CRPR 1B.1	Coastal scrub, valley and foothill grassland. Sandy soils. 15-1015 m.	Habitat Present	Not Expected: Suitable habitat is marginal in the BSA, but reported occurrence is from 1902 with poor locational integrity. CNDDB lists this population as presumed extirpated.
Dodecahema leptoceras	slender-horned spineflower	FE/SE/CRPR 1B.1	sandy openings in Chaparral, Cismontane woodland, Coastal scrub (alluvial fan)	Absent	Not Expected: Habitats preferred by this species are generally absent from the BSA
Dudleya cymosa ssp. ovatifolia	Santa Monica Mountains dudleya	FT/CRPR 1B.1/NCCP	In canyons on volcanic or sedimentary substrates; primarily on north-facing slopes. 150-335 m.	Absent	<b>Not Expected:</b> Habitat for this species is absent from the BSA
Dudleya stolonifera	Laguna Beach dudleya	FT/ST/CRPR 1B.1/NCCP	Rocky outcroppings in Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland	Absent	Not Expected. Rocky outcroppings were not present within the survey buffer. This conspicuous perennial species was not observed during the survey.
Eriastrum densifolium ssp. sanctorum	Santa Ana River woollystar	FE/SE/ CRPR 1B.1	Coastal scrub, chaparral. In sandy soils on river floodplains or terraced fluvial deposits. 180-705m.	Absent	<b>Not Expected</b> : Habitats preferred by this species are generally absent from the BSA
Eryngium aristulatum var. parishii	San Diego button-celery	FE/SE/ CRPR 1B.1	Vernal pools, coastal scrub, valley and foothill grassland. San Diego mesa hardpan & claypan vernal pools & southern interior basalt flow vernal pools; usually surrounded by scrub. 15-880 m.	Absent	Not Expected: Habitats preferred by this species are generally absent from the BSA
Nasturtium gambelii	Gambel's water cress	FE/ST/CRPR 1B.1	Marshes and swamps. Freshwater and brackish marshes at the margins of lakes and along streams, in or just above the water level. 5-305 m.	Absent	Not Expected: Habitats preferred by this species are generally absent from the BSA
Orcuttia californica	California Orcutt grass	FE/SE/CRPR 1B.1	Vernal pools. 10-660 m.	Absent	Not Expected: Habitats preferred by this species are generally absent from the BSA
Verbesina dissita	big-leaved crownbeard	FT/ST/CRPR 1B.1	Steep, rocky, primarily north-facing slopes in chaparral and coastal scrub within 1.5 miles of the ocean, in gravelly soils. 150-245 m.	Absent	Not Expected: Habitats preferred by this species are generally absent from the BSA

Status:

Federal Endangered (FE); Federal Threatened (FT); State Endangered (SE); State Threatened (ST); California Rare Plant Rank (CRPR). NCCP/HCP Identified Species, covered under the NCCP/HCP (NCCP).

#### 3.2.2 Special-Status Wildlife

Based on the CNDDB (2020) review of the USGS Orange quadrangle and the USFWS (2020) and NMFS (2020) species lists, a total of fifty-seven (57) special-status wildlife species were identified as reported in the regions of which 19 are also Identified Species that are subject to coverage under the NCCP/HCP. Twenty-one (21) of these 57 species are federally and/or state listed as endangered or threatened, or are candidates for federal/state listing. Potentially suitable habitat for 2 of these 21 species is present within the BSA, including for coastal California gnatcatcher and least Bell's vireo. No USFWS-designated critical habitat is present within the BSA. The status and habitat requirements and conclusions regarding the potential for each listed species to occur within the BSA are presented in Table 3, below. A complete table identifying the status and habitat requirements for all 57 species noted in the region from the literature, and determinations regarding the potential for each to occur within the BSA are provided in Appendix E.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent	Rationale				
	Invertebrates								
Euphydryas editha quino	Quino checkerspot butterfly	FE	Sunny openings within chaparral & coastal sage shrublands in parts of Riverside & San Diego counties. Hills and mesas near the coast. Need high densities of food plants <i>Plantago</i> erecta, <i>P. insularis</i> , and <i>Orthocarpus</i> purpurascens.	Absent	Food plant absent from the BSA.				
Branchinecta sandiegonensis	San Diego fairy shrimp	FE	Endemic to San Diego and Orange County mesas. Vernal pools.	Absent	Vernal pool habitat not observed within the BSA				
Streptocephalus woottoni	Riverside fairy shrimp	FE	Endemic to Western Riverside, Orange, and San Diego counties in areas of tectonic swales/earth slump basins in grassland and coastal sage scrub. Inhabit seasonally astatic pools filled by winter/spring rains. Hatch in warm water later in the season.	Absent	Vernal pool habitat not observed within the BSA				
			Fish						
Catostomus santaanae	Santa Ana sucker	FT	Endemic to Los Angeles Basin south coastal streams. Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water, and algae.	Absent	No suitable habitat present within BSA				
Oncorhynchus mykiss irideus (pop. 10)	steelhead - southern California DPS	FE, NMFS	Federal listing refers to populations from Santa Maria River south to southern extent of range (San Mateo Creek in San Diego County). Southern steelhead likely have greater physiological tolerances to warmer water and more variable conditions.	Absent	No suitable habitat not present within BSA				
Amphibian									
Anaxyrus californicus	arroyo toad	FE/SSC	Semi-arid regions near washes or intermittent streams, including valley- foothill and desert riparian, desert wash, etc. Rivers with sandy banks, willows, cottonwoods, and sycamores; loose, gravelly areas of streams in drier parts of range.	Absent	This species is not reported or expected to occur in the local area, but occurs in the major stream systems in the Santa Ana Mountains.				

Table 3:	Federal	and/or S	State L	isted	Wildlife	Species	Considered.
	. ouorai				<b>U</b> manno	000000	001101401041

Common	Scientific	Statue	General Habitat	Habitat Brosont/	Pationalo
Name	Name	Status	Description	Absent	Rationale
			Birds		
Agelaius tricolor	tricolored blackbird	ST	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	Absent	No suitable habitat present within BSA.
Aquila chrysaetos	golden eagle	FP/BEGE	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff- walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	Absent	No suitable nesting habitat present within BSA. Species may occasionally forage in the vicinity.
Buteo swainsoni	Swainson's hawk	ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Absent	Not within nesting range. During migration this species may pass through the area but does not nest south of Tehachapi Range in northern L.A County.
Charadrius alexandrinus nivosus	western snowy plover	FT	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	Absent	No suitable habitat present within BSA.
Coccyzus americanus occidentalis	western yellow- billed cuckoo	FT/SE	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	Absent	No suitable habitat present within BSA. Not known to occur in Orange County in recent decades
Empidonax traillii extimus	southwestern willow flycatcher	FE/SE	Riparian woodlands in Southern California.	Absent	Riparian habitat in BSA and adjacent is not extensive enough to be considered suitable nesting habitat for this species. Thus, suitable habitat not present within BSA.
Haliaeetus leucocephalus	bald eagle	SE	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	Absent	No suitable nesting habitat present within BSA. Species may occasionally forage in the vicinity.
Laterallus jamaicensis coturniculus	California black rail	ST	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	Absent	No suitable habitat present within BSA.
Passerculus sandwichensis beldingi	Belding's savannah sparrow	SE	Inhabits coastal salt marshes, from Santa Barbara south through San Diego County. Nests in Salicornia on and about margins of tidal flats.	Absent	No suitable habitat within the BSA.
Polioptila californica californica	coastal California gnatcatcher	ST/SSC/NCCP	Obligate, permanent resident of coastal sage scrub below 2500 ft. in Southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	Present	Suitable habitat is present and species was detected nearby during Geotechnical monitoring. Known to nest in Peters Canyon Regional Park.
Rallus obsoletus levipes	light-footed Ridgway's rail	SE/FE/FP	Found in salt marshes traversed by tidal sloughs, where cordgrass and pickleweed are the dominant vegetation. Requires dense growth of either pickleweed or cordgrass for nesting or escape cover; feeds on mollusks and crustaceans.	Absent	Suitable habitat not present within the BSA.
Riparia riparia	bank swallow	ST	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	Absent	Suitable habitat not present within the BSA.

Common Name	Scientific Name	Status	General Habitat Description Habi Pres Abso		Rationale
Sternula antillarum browni	California least tern	FE/SE	Nests along the coast from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, land-fills, or paved areas.	Absent	Suitable habitat not present within the BSA.
Vireo bellii pusillus	least Bell's vireo	FE/SE	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	Present	Least Bell's vireo were audibly detected in areas adjacent to the BSA within Peters Canyon Regional Park.
			Mammals		
Perognathus longimembris pacificus	Pacific pocket mouse	FE/SSC	Inhabits the narrow coastal plains from the Mexican border north to El Segundo, Los Angeles County. Seems to prefer soils of fine alluvial sands near the ocean, but much remains to be learned.	Absent	Suitable habitat not present within the BSA. BSA is beyond known geographic range (too far inland).
Federal       FT – Federally Threatened under Federal Endangered Species Act (FESA)         FE – Federally Endangered under FESA         BEGE – Federal Bald Eagle and Golden Eagle Protection Act					
State         SE – State Endangered under California Endangered Species Act (CESA)           FP – Designated Fully Protected by CDFW           SSC – California Species of Special Concern (designated by CDFW)					
Other NCCP - Ident	tified Species under	the NCCP/HCP.			

#### 3.2.3 Regional Habitats and Natural Communities of Concern

Habitats or natural communities of concern are those designated as rare in the region by the CNDDB and/or that support special-status plant or wildlife species, or that receive regulatory protection (e.g., under Section 404 of the federal CWA and/or Section 1600 of the CFGC) (see Section 3.2.4). Rare communities are given the highest inventory priority (CDFG 2010; Holland 1986). The CNDDB (2020), reports twelve (12) natural communities of concern occurring in the 7.5 min. USGS quadrangle map for Orange and the surrounding 8 quadrangle maps. These include: California Walnut Woodland, Riversidian Alluvial Fan Sage Scrub, Southern California Arroyo Chub/Santa Ana Sucker Stream, Southern Coast Live Oak Riparian Forest, Southern Cottonwood Willow Riparian Forest, Southern Interior Cypress Forest, Southern Riparian Scrub, Southern Coastal Salt Marsh, Southern Dune Scrub, Southern Foredunes, Southern Sycamore Alder Riparian Woodland, and Southern Willow Scrub.

Only one of these sensitive communities, Southern Willow Scrub (in the form of black willow thicket), was identified within the BSA.

# 4. Results: Biological Resources, Discussion of Impacts, and Mitigation

Construction of the Proposed Project will occur within a very narrow footprint, typically sixteen-feet-wide or less, along the west side of the existing roadway and sidewalk and will involve direct impacts associated with required limited removal and disturbance of existing native vegetation where that occurs directly adjacent to the existing sidewalk. In addition, the Proposed Project is expected to involve removal of non-native trees planted as ornamental landscaping along or adjacent to the sidewalk. As construction will be of relatively short duration and construction activity will be confined to a narrow area adjacent to a busy arterial highway, the Proposed Project will have minimal indirect impacts to surrounding native habitat. Involving temporary increases in construction dust and noise slightly above current traffic levels.

#### 4.1 Habitats and Natural Communities of Special Concern

As previously noted, natural communities of special concern are those designated as rare in the region by the CNDDB, those types that support special-status plant or wildlife species, or that are subject to regulatory protection (e.g., under Section 404 of the CWA and/or Sections 1600 of the CFGC). According to the current California Natural Community List, only one natural community listed as a "sensitive" alliance, black willow thicket (aka Southern Willow Woodland), occurs in the BSA for the Proposed Project, with patches present on either side of Jamboree Road near the northern project limit.

Although not specifically noted as "sensitive" on the List referenced above, the coastal sage scrub plant communities, including deerweed scrub and cactus scrub subtypes, are considered to be of concern in Southern California as they provide suitable habitat for various special status species of wildlife, including coastal California gnatcatcher, orange-throated whiptail, and cactus wren, among others.

Mulefat scrub also may be considered part of a sensitive woody riparian community to the extent that patches or strips of mulefat may provide suitable habitat for special status species and/or where it occurs in association with a regulated riparian feature, such as a streambed or lake, and would thus be subject to State and/or federal regulatory protection. Each of these and all the other plant communities and types of land cover found in the BSA are described below and illustrated in Figure 3.

#### 4.2 Natural Communities and Other Vegetation Types

Native plant communities occur along either side of Jamboree Road, within Peters Canyon Regional Park on the west side and in open space on the east side of Jamboree Road, between Jamboree Road and the nearby SR-261 Toll Road alignment further to the east. Most of the area in the northern part of Peters Canyon Regional Park, including the BSA for this project along the west side of Jamboree Road (except the residential area) was burned during the Canyon 2 Fire in October 2017. Prior to that, virtually all the natural areas in the BSA on both sides of Jamboree Road were burned ten years earlier during the Santiago Fire in October 2007. Coastal sage scrub (CSS) is common to dominant in the general area including the BSA and is well adapted to fire and recovers quickly after fire. Evidence indicates that most of the CSS community adjacent to the roadway was intentionally restored and was maintained by contractors. This is relatively obvious because there is an extensive but mostly abandoned irrigation system through the scrub vegetation on the low slope along the west side of Jamboree Road. In addition to CSS, a few patches of native riparian vegetation are also present near the north end of the BSA. Ornamental vegetation and non-native trees also occur along Jamboree Road, primarily on the segment adjacent to the residential community but with a few trees planted elsewhere next to the sidewalk. The descriptions of the various communities presented below correspond with those elements depicted on Figure 3, Vegetation and Land Use.

#### 4.2.1 Upland Plant Communities

#### 4.2.1.1 Coastal Sage Scrub / Buckwheat Scrub

The most common upland plant community is comprised of representative shrubs of the coastal sage scrub (CSS) community. This scrub consists of drought-deciduous, low (typically <1 - 1.5m tall), soft-leaved shrubs and herbs. While there is considerable variety observed across the spectrum of coastal sage scrub vegetation types, several species are very commonly present and frequently contribute dominant elements. In the BSA, for example, California buckwheat (*Eriogonum fasciculatum*) is typically dominant, thus the reference to that species in the selected dual classification for this community. Other native shrub species noted in the community that may be co-dominant or common within the CSS are California sagebrush (Artemisia californica), white sage (Salvia apiana), deerweed (Acmispon glaber), black sage (Salvia mellifera), California encelia (Encelia californica), and coastal goldenbush (Isocoma menziesii). A common succulent in CSS, prickly pear cactus (Opuntia littoralis), was also noted scattered around in the CSS in the BSA. In addition, although most CSS shrubs tend to be less than 6 feet in height, some taller shrubs, such as laurel sumac (Malosma laurina), lemonadeberry (Rhus integrifolia), toyon (Heteromeles arbutifolia), and elderberry (Sambucus nigra), were also present in some areas. Near the north end of the BSA, next to Jamboree Road, mulefat (Baccharis salicifolia) was also present in this community with coyote bush (Baccharis pilularis), sagebrush and other CSS and ruderal species.



SOURCE: Mapbox; ESA, 2020.

Peters Canyon Bikeway Extension Project Figure 3 Vegetation and Land Use

Natural Environment Study (Minimal Impacts)

This page intentionally left blank

#### 4.2.1.2 Deerweed Scrub

Deerweed scrub (*Acmispon glaber* shrubland alliance) is a subtype of CSS that exhibits significant dominance by deerweed in an open to intermittent shrub layer. The herbaceous layer is sparse throughout the year. Deerweed is an early colonizer of disturbed sites throughout much of central and southern California. It dominates recently burned patches of chaparral and CSS. As this subtype lacks the denser and more diverse shrub cover found in typical CSS, it does not provide optimal value to nesting birds that prefer more cover and better foraging opportunities. However, it will eventually give rise to the more diverse community as other shrub specimens establish a foothold in this early sere of the CSS climax community.

Deerweed scrub is found in a narrow patch along Jamboree Road and appears to have become established after the 2017 Canyon 2 Fire and/or as the result of recent habitat restoration area.

#### 4.2.1.3 Cactus Scrub

Cactus scrub is a form of CSS that occurs in at least one large patch in the BSA. This community may also be characterized as coast prickly pear scrub (*Opuntia littoralis* Shrubland Alliance) as it is comprised primarily of coast prickly pear cactus, typically in large, closed canopy patches. This community occurs west of Jamboree Road and just north of the Vidorra residential community. This CSS sub-type does not occur within the project work area

#### 4.2.1.4 Ruderal

Ruderal (weedy) is an herbaceous community that consists of non-native annual grass species and common weedy forbs and herbs that readily colonize disturbed ground. In the BSA, common ruderal species noted include tocalote (*Centaurea melitensis*), red brome (*Bromus madritensis*), mustard (*Brassica* and *Hirschfeldia* spp.), scarlet pimpernel (*Lysimachia arvensis*), redstem filaree (*Erodium cicutarium*) and various other common non-native grasses and common herbs.

#### 4.2.2 Riparian Plant Communities

#### 4.2.2.1 Black Willow Thickets / Willow Scrub

Black willow thickets (*Salix gooddingii* woodland alliance) consist of black willow as the dominant or co-dominant species in the tree canopy with an open to continuous shrub layer and a variable herbaceous layer. This community is found on terraces along large rivers and canyons, and along rocky floodplains of small, intermittent streams, seeps, and springs. The black willow thicket community in this region is equivalent to Holland's (1986) southern willow scrub and thus can be considered a natural community of concern. Black willow thicket within the BSA is dominated by black willow, with mulefat (*Baccharis salicifolia*), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), and Mexican elderberry (*Sambucus nigra* ssp. *caerulea*) is also present in this community.

#### 4.2.2.2 Mulefat Scrub

Mulefat scrub (*Baccharis salicifolia* Shrubland Alliance) consists of mulefat as the dominant species in the shrub layer with a continuous two-tiered canopy consisting of sparse herbaceous layer and emergent trees like oaks, elderberry or cottonwoods in low numbers. This community is generally found in canyon bottoms, floodplains, lake margins and along stream channels. Mulefat scrub occurs on the west side of the multi-use trail, next to a drainage area near the north end of the BSA.

#### 4.2.3 Developed and Disturbed Areas

Areas that have been developed or are regularly disturbed by vehicles and other uses generally lack native vegetation and typically have limited biological resource values, if any. Ornamental vegetation may afford some nesting and foraging opportunities for wildlife, but avian and terrestrial species that typically occur in developed areas are those that are highly adapted to development and human activity. Special status species would only rarely occur in such areas, if at all.

#### 4.2.3.1 Residential and Other Development

In the BSA, the Vidorra residential community occurs along a 0.25-mile section of the west side of Jamboree Road, north of Pioneer Road. Other development includes a small Metropolitan Water District facility on the west side of Jamboree Road just south of the Peters Canyon Road gated road access entry.

#### 4.2.3.2 Non-native/Ornamental

Non-native/ornamental vegetation includes areas that have been developed and now exhibit ornamental landscaping using non-native trees and shrubs. Most of the ornamental vegetation in the BSA occurs along the roadway adjacent to the Vidorra residential community and consists mainly of non-native street trees including eucalyptus (*Eucalyptus* spp.), pine (*Pinus* spp.), olive (*Olea europaea*), and Peruvian pepper (*Schinus molle*) trees. A few other Peruvian pepper trees also occur just off the sidewalk along Jamboree Road but away from residential areas. Several of these non-native trees stand in a narrow landscaped strip between the existing pedestrian walkway and Jamboree Road just south of the intersection of Jamboree Road with Canyon View Avenue at the very north end of the Proposed Project.

#### 4.2.3.3 Turf

Small patches of mowed turf grass occur at the intersection of Jamboree Road and Pioneer and contribute to the ornamental landscape in that area.

#### 4.2.3.4 Roads, Trails, Parking Areas

These areas include all paved roadway areas and concrete sidewalks, as well as the compacted trails inside the Regional Park, the parking area along Canyon View

Avenue within the Regional Park, and the MWD facility parking area which lack any vegetative cover.

#### 4.2.3.5 Bare Ground

Areas of exposed native soils generally void of vegetation and man-made structures were mapped as bare ground. In the BSA, this included trails and other areas that were highly disturbed and lay outside the Project footprint.

#### 4.3 **Project Impacts**

The Proposed Project has been designed to limit disturbance of natural areas and to avoid potential impacts to the maximum extent feasible. The impacts associated with the Proposed Project will involve permanent impacts, where implementation of demolition, grading, and construction of the Class 1 bikeway extension will permanently displace existing vegetation types and create a permanent hardscape. In addition to the permanent impacts represented by complete removal of a strip of vegetation as the result of constructed concrete retaining wall, sidewalk edge, or curb, as also permanently impacted. Although vegetation may become reestablished in this "maintenance buffer" strip, the County will retain the ability to cut back or remove vegetation within this narrow strip at its discretion to prevent it from overhanging the bike path or overgrowing the retaining wall or from developing roots that may damage concrete or retaining wall foundations. Thus the area is deemed to be permanently impacted.

Natural areas containing native vegetation that may be disturbed during construction beyond the permanent construction edge and the 3-foot-wide buffer, are considered to be temporarily impacted because these areas would be revegetated. This analysis assumes that the potential maximum limit of temporary disturbance is represented by the area within the Temporary Construction Easement (TCE, as depicted on the plan drawings) excluding the permanently impacted strip between the existing ROW and the west edge of 3' maintenance buffer along the west side of the permanent bikeway and retaining wall edge. This area will only be impacted to the extent that grading and construction equipment requires room to construct the permanent bikeway. The TCE extends the length of the Proposed Project from Canyon View Avenue to the residential housing area and, although its width varies in a few situations due to constraints, it is typically 16-feet-wide strip between the existing ROW of Jamboree Road (which generally corresponds to the west edge of the existing sidewalk) west into the Regional Park property.

Beginning at the intersection of Jamboree Road and Pioneer Road, the project changes from a Class 1 bikeway to a Class 2 Buffered Bike Lane. The entire length of the Class 2 buffered bike lane would consist of re-striping traffic and bike lanes and will require no other disturbance or construction along this segment of the project. As a result, no direct adverse impacts to natural habitats would occur along the Class 2 bikeway from Pioneer Road to Tustin Ranch Road.

The Upland and the Riparian Communities described above constitute natural areas that contain biological resource values. As noted in Table 3A<sup>1</sup>, below, the Proposed project will permanently displace 0.77-acre of native Upland Communities, comprised of approximately 0.56-acre of CSS/Buckwheat Scrub and 0.20-acre of the Deerweed Scrub subtype of CSS. Beyond the maintenance buffer strip, approximately 0.80-acre of these scrub habitats, including up to 0.61-acre of CSS/Buckwheat Scrub and 0.19-acre of Deerweed scrub may also be temporarily impacted within the TCE.

Non-native vegetation including approximately 0.14-acre of ruderal (weedy) vegetation, north of the gated Peters Canyon entry road, and 0.03-acre of landscape Peruvian pepper tree will also be subject to permanent impacts. Temporary impacts may also occur to 0.13-acre of ruderal vegetation and up to 0.02-acre of non-native landscaping. To the extent that ruderal vegetation may be affected, it would not be replaced in kind but would be revegetated with CSS.

Table 3A identifies each of the natural communities and vegetation or land cover types that will be permanently displaced or that may be temporarily disturbed as the result of implementation of the Proposed Project. Permanent impacts were determined by using project CAD drawings and GIS mapping of the vegetation types to determine where the ultimate project edge, including the outer edge of the retaining wall, would displace vegetation. In addition, the 3-foot-wide buffer was added on the west side of the retaining wall and/or the edge of any hardscape associated with the project, which is also considered to be permanently displaced. Temporary impacts were identified as all areas beyond the permanent impact edge and 3' buffer strip to the maximum extent of the Temporary Construction Easement (TCE) as indicated on CAD drawings. It is likely that the actual area temporarily affected by construction will be somewhat less than the maximum acreage indicated below on Table 3A.

Recently, the Irvine Ranch Water District (IRWD) conducted some maintenance work in discrete areas on the west side of Jamboree Road near the MWD facility. Upon completion of their activities, IRWD implemented revegetation to reestablish CSS vegetation where it was disturbed by the work. Part of the overall area containing CSS that the Proposed Project will permanently displace or temporarily disturb overlaps a small section of this area that IRWD is still maintaining. This area amounts to just 0.01-acre of CSS permanently displaced and approximately 0.02-acre of CSS potentially temporarily disturbed within the TCE for this project.

<sup>&</sup>lt;sup>1</sup> Please note that acreages reported in the text show values to the hundredths place, which is the correct use of significant figures to appropriately reflect the level of accuracy of habitat mapping. The acreages reported in the table are presented to the thousandths place (e.g., 0.001) to account for GIS computation and rounding.

Vegetation Community/Land Cover Type	Permanent Impacts <sup>2</sup> (Acres)	Temporary Impacts (Acres)						
Native Upland Vegetation								
Coastal Sage Scrub / Buckwheat Scrub	0.563	0.606						
Deerweed Scrub	0.202	0.191						
Native Upland Habitat Subtotal	0.765	0.797						
Non-Native Vegetation								
Ruderal	0.140	0.131						
Ornamental Landscaping / Non-Native Trees	0.028	0.018						
Developed or Barren Areas								
Roads, Trails, Parking Areas, Other Dev.	0.026	0.052						
Bare Ground	0.001	0.010						
Total Acreage	0.960	1.008						

Table 3A:	Project Impacts to Vegetation Communities and Land Cover	Types in or
Adjacent t	to Peters Canyon Regional Park	

Table 3B identifies the areas that are anticipated to be permanently or temporarily impacted by the Proposed Project along the 0.25-mile-long segment of Jamboree Road where it lies adjacent to the local residential community north of Pioneer Road. Although impacts to non-native trees and ornamental vegetation area expected to occur where the project will replace the existing sidewalk with a new bike path, these impacts will not affect natural plant communities and would have only very limited potential impacts to local avifauna (birds) that may perch in the street trees occasionally in this area. Due to the location directly adjacent to the 4-lane roadway, avian use of these trees for nesting is expected to be very limited.

Along the project segment adjacent to the residential area, up to approximately 34 nonnative trees may be removed, including up to 24 trees located within the Jamboree Road Right-of-Way. Further north, along the 0.9-mile project segment adjacent to Peters Canyon Regional Park, one Peruvian pepper tree may be removed in the TCE about 1,500 feet north of the residential area, and at least two more near the Canyon View Avenue intersection. Several large, arborescent (tree-like) native shrubs may also be removed within the TCE in an area 700 to 800 feet south of Peters Canyon Road.

<sup>&</sup>lt;sup>2</sup> Permanent impacts include a three-foot-wide buffer strip beyond the retaining wall to allow for discretionary maintenance such as vegetation removal.

Vegetation Community/Land Cover Type	Permanent Impacts (Acres)	Temporary Impacts (Acres)		
Non-Native Vegetation				
Ornamental Landscaping / Non-Native Trees	0.208	0.078		
Developed or Barren Areas				
Roads, Trails	0.023	0.001		
Residential and Other Development	0.014	0.010		
Total Acreage	0.245	0.089		

 Table 3B: Project Impacts to Vegetation Communities and Land Cover Types Adjacent to

 Vidorra Residential Area (Away from Regional Park)

#### 4.4 Avoidance and Minimization Efforts/Compensatory Mitigation

The Proposed Project is planned and designed to limit potential impacts to natural vegetation to extent practical while allowing for construction to proceed that will result in an adequate Class 1 bikeway extension that is out of traffic lanes along Jamboree Road. This will involve some widening of the existing sidewalk and construction of a low retaining wall, which will encroach slightly to the west of the existing Right-of Way along Jamboree Road and displace or disturb a sliver of natural vegetation just inside the limit of Peters Canyon Regional Park. As indicated by the impact analysis and acreages of particular areas subject to direct permanent and potential temporary impacts shown in Table 3A, impacts resulting from the Proposed Project will be limited to less than 0.76-acre of natural areas permanently displaced and not more than 0.80acre of natural areas temporarily disturbed. As these impacts cannot be avoided, minimization and mitigation will be provided through compliance with relevant NCCP/HCP measures described below. These will include: adhering to guidelines for avoiding clearing and vegetation removal during the breeding season (or providing qualified biological monitoring prior to and during clearing of scrub vegetation and tree removal), deducting from the County's allotted CSS impact credits to compensate for direct loss of CSS and displacement of other acreage within the NCCP Reserve, and provisions for revegetating temporarily disturbed areas to reestablish CSS.

Impacts along the segment of Jamboree Road adjacent to the residential community north of Pioneer Road are limited to removal of some non-native trees and limited areas of ornamental landscaping. To the extent such removals may occur during the avian breeding season, a qualified biological monitor will be required to conduct a pre-activity nesting bird survey to assure that removal will not disturb or destroy any active nests.

No impacts are anticipated along the Class 2 buffered bike lane along Pioneer Road as no construction is planned along that segment, but only restriping the roadway.

The following Avoidance and Minimization Measures were identified as a means of avoiding and minimizing encroachment into natural communities adjacent to the Project

footprint and adverse indirect temporary impacts to natural habitats and communities of special concern occurring adjacent to the Project footprint.

#### 4.4.1 NCCP/HCP Compensatory Mitigation

As noted herein, the land abutting and directly west from the Jamboree Road Right-of Way lies within Peters Canyon Regional Park. The Regional Park is also a component of the NCCP/HCP Reserve System and the natural areas within it are part of the NCCP Reserve. Figure 4, "NCCP/HCP Reserve Area Overlay" identifies the approximate configuration of the Reserve and indicates where the Proposed Project would be constructed in relation to the Reserve and Jamboree Road.

Direct impacts to natural lands within the NCCP Reserve will be compensated for through implementation of mitigation consistent with provisions in the NCCP/HCP and the Implementing Agreement for Permitted Uses within the Reserve. Although construction of the Class 1 bikeway extension is expected to meet the standard as applicable for "construction, operation, and maintenance of new facilities necessary to support permitted recreation uses" or otherwise considered a necessary infrastructure improvement, as it was not recognized in the NCCP/HCP as a Planned Activity, the impact to the Reserve is understood to require mitigation. This will involve compensating for direct loss of acreage within the NCCP Reserve by deducting credits from the County's allotment of In-Reserve Credits equivalent to the acreage displaced.

In this case, based on discussion between County staff and USFWS representative Will Miller and Kyle Rice from CDFW, areas identified as NCCP Reserve by available NCCP/HCP Reserve Mapping that occur within the Jamboree Road Right-of-Way are considered to have been authorized to be impacted as part of the Jamboree Road construction which was counted among a number of Planned Activities anticipated and allowed under the NCCP/HCP and will not require any mitigation. In contrast, impacts associated with this Proposed Project, which occur beyond (i.e., on the west side of) the Jamboree Road Right-of Way, should be allowed under Section 5.3 of the NCCP and as further stated under Section 5.3.3 of the Implementing Agreement. However, the displacement of acreage in the Reserve is still subject to compensation via deduction In-Reserve Credits from the County's allotment. The deduction of credits will be commensurate with the total permanent displacement west of the ROW within Peters Canyon Regional Park which constitutes part of the NCCP Reserve. As the total acreage of displacement will amount to approximately 0.93-acre, excluding 0.026-acre accounted for as Roads, Trails, and Parking Areas in Table 3A, above, which are already "improved", the proposed compensation will require a deduction of allotted "In-Reserve" credits at a 1:1 ratio, and would amount to 0.93 acre. This deduction will be formally documented via letter from the County of Orange to both USFWS and CDFW representatives that specifies the deducted amount and the relevant project that accounts for this deduction.

#### 4.4.2 Mitigation for Temporary Impacts in the NCCP/HCP Reserve

Approximately 0.96-acre inside the NCCP/HCP Reserve (in Peters Canyon Regional Park) may be disturbed by construction of the Proposed Project within the TCE, excluding the proposed Class 1 Bikeway improvements (plus a 3-foot-wide

maintenance buffer) and also excluding 0.05-acre identified as Roads, Trails, and Parking Areas in Table 3A, above, which are already "improved". Mitigation for these temporarily disturbed areas is proposed to be provided through restoration of at least CSS and Mulefat Scrub vegetation at a minimum 1:1 ratio, along with revegetation of Ruderal vegetation and Bare Ground areas with CSS vegetation. Ornamental landscaping will be replaced in-kind or with native trees or shrubs as determined through coordination with the OC Parks staff. Mitigation will be provided through implementation of the measures presented below:

BIO-1 **Restoration Plan** OCPW shall require preparation of a revegetation plan by a qualified restoration specialist to establish appropriate native vegetation throughout all areas temporarily disturbed by the Peters Canyon Bikeway Extension Project within Peters Canyon Park, excluding areas identified as "Roads, Trails, and Parking Areas". The plan shall identify all areas to be revegetated and include palettes of appropriate container plants and seed species. The plan shall specify a representative mix of native coastal sage scrub shrubs, herbs and native grass species derived from local sources (e.g., within 20 miles of the site) that mimics the existing scrub vegetation in adjacent areas. OC Parks shall review and approve the plan and will have the option to replace any ornamental vegetation with the same species, or may select native shrub or tree alternatives. The plan shall include planting and seeding materials and methods, timing, irrigation requirements, maintenance activities, and a requirement for annual progress reports. The plan shall include performance criteria to measure success and standards shall include, at minimum, at least 75% cover by native species within 5 years from initial planting and seed application. OCPW shall contract for implementation of the approved plan with a qualified contractor with restoration expertise. Implementation shall commence within one calendar year from completion of construction. Progress Reports detailing the revegetation process shall be prepared and submitted within 12 months after initial plant and seed installation is substantially completed and annually by the same date for four subsequent years after the first report. Progress reports shall be provided to OC Parks, USFWS and CDFW representatives involved with NCCP/HCP oversight.


SOURCE: Mapbox; ESA, 2020.

Peters Canyon Bikeway Extension Project Figure 4 NCCP / HCP Reserve Areas Overlay

Natural Environment Study (Minimal Impacts)

This page intentionally left blank

#### 4.4.3 Avoidance and Minimization Measures to Reduce Indirect Impacts

Implementation of BIO-2 through BIO-4 below, will avoid and minimize indirect impacts to biological resources in the project vicinity to the extent feasible.

- **BIO-2** The limits of construction activities and staging for the project within or adjacent to Peters Canyon Regional Park shall be clearly marked with staking and flagging. Staking and flagging shall be checked and confirmed by OCPW or its biological monitor and no activity will be permitted beyond designated work areas without written authorization from OCPW including a record drawing identifying the revised limit.
- **BIO-3** In order to obtain coverage under the Statewide General Permit for Discharges of Storm Water Associated with Construction Activity (Order 2009-0009-DWQ), the County must submit a Notice of Intent (NOI) and a Stormwater Pollution Prevention Plan (SWPPP) to the Regional Board in accordance with current procedures. Prior to the start of construction, a Stormwater Pollution Prevention Plan (SWPPP) will be prepared and a copy maintained on site during construction. The SWPPP will outline refueling locations, emergency response equipment and procedures for clean ups, and will include measures to control surface runoff and erosion, and will establish reporting requirements.
- BIO-4 Standard dust control measures such as watering and stabilization of soils will be implemented as appropriate to reduce fugitive dust during any pavement or ground disturbing activities. Best available control measures (BACMs) are prescribed and discussed in Table 1 of the SCAQMD Rule 403, available for reference here: https://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf?sfvrsn=4

#### 4.5 Special Status Plant Species

A number of plant species in the region are designated as having special status based on federal, state, or local laws that regulate impacts to these species and/or due to their rarity or limited distribution.

#### 4.5.1 Discussion of Plant Species / Survey Results

No special-status plant species were observed within the BSA during the field surveys. Two federally threatened plant species, big-leaved crownbeard (*Verbesina dissita*) and Laguna Beach liveforever (*dudleya stolonifera*), were identified on the USFWS species list obtained for the Project (Appendix B). Ten other State and/or federally-listed species were noted in the region by the CNDDB, as listed above in Table 2 in Section 3.2.1. The project area either lacks suitable habitat, has been too disturbed by relatively recent activities, or lies outside the known geographic or elevational range of all these species. Among the entire list, only Braunton's milk vetch, thread-leaved Brodiaea, San Fernando Valley spineflower, and Laguna Beach dudleya were considered to have any potential to occur. Except for the spineflower, which has not been observed in Orange County since 1902, these species would have been spotted during surveys and are all very rare in the area and have not been previously detected or reported in the immediate vicinity, and the site's history of disturbance together rule out the potential for these to be present. No USFWS-designated critical habitat for any listed plant species occurs in or near the BSA.

Several other non-listed special-status plant species may have some potential to occur within the BSA, including four plants that are Identified Species under the NCCP/HCP (Appendix D). Also, a recent Biological Survey Report for the Peters Canyon Regional Park Resource Management Plan (Michael Baker International, 2016), identified four special status plants in Peters Canyon Regional Park including Catalina mariposa lily (Calochortus catalinae) Southern California black walnut (Juglans californica) Coulter's matilija poppy (Romneya coulteri), and San Diego County needle grass (Stipa diegoensis). Each of these four species is designated as CRPR 4.2, indicating relatively low levels of concern and none of these plants were identified by that report as present within the BSA for the Peters Canyon Bikeway Extension Project. Two other species, Hubby's phacelia (Phacelia hubbyi), designated a CRPR 4.2, and Intermediate mariposa lily (Calochortus weedii intermedius), a list 1.B species, were also considered to have some potential to occur. Hubby's phacelia was reported to occur in a dense willow grove in Peters Canyon Regional Park in 2018. The Proposed Project will not affect any willow groves. Neither Hubby's phacelia or the intermediate mariposa lily were located during surveys for the Proposed Project, and the lily is not known to occur in the park. Although the potential for either of these plants to occur in the BSA could not be ruled out, the possibility that the project could directly affect any significant population or that either may occur in that narrow strip affected by construction, is remote. Furthermore, the intermediate mariposa lily is covered under the NCCP/HCP, so if any impacts might have occurred to that species, compliance with NCCP provisions would have addressed that.

As noted above, the work area for the Proposed Project is restricted to a narrow area containing the west edge of Jamboree Road, the sidewalk, and a strip of vegetation that generally extends less than 20' from the sidewalk edge throughout the project segment where it abuts Peters Canyon Regional Park. These areas were inspected with some care during the survey and during subsequent monitoring during geotechnical investigations and no special status plants were detected.

#### 4.5.2 Project Impacts

Very little potentially suitable habitat for special-status plant species occurs within the natural area anticipated to be directly affected by construction of the Proposed Project. As noted above project impacts will be limited to less than 0.76-acre of natural areas permanently displaced and not more than 0.80-acre of natural areas temporarily disturbed. Furthermore, the affected area is not actually in a "natural" state but appears to have been completely restored within the last 20 years or so.

Based on the evidence of recent disturbance and habitat restoration, it was determined that where the project work area extends just west of the road and sidewalk into the Regional Park (along the relevant segment of Jamboree Road), the potential for this narrow strip to support special status plant species is extremely low to nonexistent. Therefore, the Proposed Project is not expected to result in any impacts to special-status plants. Therefore, due to recent disturbance, the potential for special status plants to occur in this limited area is much more reduced.

#### 4.5.3 Avoidance and Minimization Efforts/Compensatory Mitigation

Due to the area's history of recent disturbance, fires, and restoration of upland scrub, it is considered highly unlikely that any special status plants could occur in the area affected by the Proposed Project. Therefore, no avoidance, minimization, or compensatory mitigation is warranted or recommended.

The County of Orange is a participating landowner and will comply with requirements established in the NCCP/HCP. The NCCP/HCP provides a framework that provides for conservation of multiple species, particularly species associated with CSS, which includes several special status plants. Although the Proposed Project is not expected to impact any special status plant specimens, the County has already contributed land and resources to the NCCP/HCP conservation goals which substantially benefit such species. No additional avoidance or mitigation is required as the Proposed Project is not expected to result in any direct or indirect impacts to special status plants.

#### 4.6 Special Status Animal Species

Wildlife species are considered to have special status if they are subject to (1) federal, state, or local laws that designate special protection for them or their habitat; (2) if they are particularly rare or have very limited distribution; and/or (3) the habitat requirements of special status animals occurring adjacent to the Project footprint.

For many of the species noted on the USFWS, CNDDB and NMFS species lists obtained for the Project (Appendices A, B and C, respectively), the BSA for the Proposed Project contains no suitable habitat or the area lies outside these species' geographic or elevation range. The following listed species are considered to have virtually no potential to occur in the BSA for this project: western vellow-billed cuckoo, Santa Ana sucker, Quino checkerspot butterfly, Riverside fairy shrimp, San Diego fairy shrimp, Pacific pocket mouse, California least tern, light-footed Ridgway's rail, western snowy plover, and Southern California steelhead. Several other listed or strictly protected species including arroyo toad, bank swallow, and southwestern willow flycatcher are very unlikely to occur due to insufficient or unsuitable habitat or would not be expected to use the area potentially affected by the project to any substantial extent. Swainson's hawk might occur briefly and potentially may forage over the area during migration, but this species is not known to nest south of the Tehachapi Range. The State-listed tricolored blackbird could have some potential to occur within the reservoir area in the Regional Park but has not been noted there in recent years and would not nest in any areas near the Proposed Project. Bald and golden eagle occur in small

numbers in the region and could forage, perhaps only very rarely, in the local area, but nesting is not expected.

Two species, the federally Threatened coastal California gnatcatcher, and the State and federally Endangered least Bell's vireo, have been observed in Peters Canyon Park and occur or are likely to occur within the BSA for the Proposed Project. Least Bell's vireo, and coastal California gnatcatcher, and other federally-listed wildlife species deemed to have some potential to occur are discussed below. All wildlife species detected are included in the compendium presented in Appendix F.

#### 4.6.1 Coastal California Gnatcatcher

#### 4.6.1.1 Survey Results

Coastal California gnatcatcher, a federally-threatened species, were detected during the survey and noted present in the BSA during geotechnical monitoring. This species was also reported in the project vicinity by Michael Baker International in 2016. Critical habitat for coastal California gnatcatcher is absent from the BSA since the area lies inside the NCCP/HCP Reserve.

#### 4.6.1.2 Project Impacts

The Proposed Project will result in displacing approximately 0.77-acre of CSS and Deerweed Scrub and temporarily disturbing up to 0.80 additional acres of scrub vegetation all within close proximity to a busy 4-lane arterial road. While this vegetation is considered to provide suitable habitat for this species, the close proximity of the affected strip of this habitat to the existing roadway somewhat curtails its value for nesting and foraging, although it is still usable. Regardless, coastal California gnatcatcher is an Identified Species under the NCCP/HCP and its conservation was a primary focal issue for the development of the NCCP/HCP. Minor impacts to CSS associated with Infrastructure Improvements for County facilities were anticipated and provide for in the NCCP/HCP. Take of this species' habitat is authorized, or "covered", through compliance with provisions of the NCCP/HCP and the Implementing Agreement. As a participating landowner and signatory to the Agreement, the County of Orange is obligated to comply with NCCP/HCP provisions.

#### 4.6.2 Least Bell's Vireo

#### 4.6.2.1 Survey Results

Least Bell's vireo is federally and state-listed endangered. Potentially suitable habitat for least Bell's vireo in the form of black willow thickets occurs adjacent to the northern portion of the BSA within Peters Canyon Regional Park; however, habitat structure within this community is marginally suitable to support least Bell's vireo, limiting habitat quality in the BSA for the species. The species is also an Identified Species that is Conditionally Covered under the NCCP/HCP. This species was detected adjacent to the BSA within Peters Canyon Regional Park during field surveys and was also reported in

the Biological Resources Report for the Regional Park's Resource Management Plan prepared by Michael Baker in 2016.

#### 4.6.2.2 Project Impacts

The Proposed Project will not result in any direct impacts to habitat suitable for least Bell's vireo. The recent fire severely burned riparian vegetation in and near the BSA, but that vegetation is recovering and is likely to continue to provide nesting habitat for least Bell's vireo. If construction occurs during the breeding season for this migratory species, such noise and disturbance could disturb active nests, if present, in the near vicinity.

#### 4.6.3 Other Special-Status Wildlife Species

Potentially suitable habitat for the following non-listed special-status wildlife species is present within the BSA, so these species have some potential to occur, as described in more detail in Appendix E: coast horned lizard (*Phrynosoma blainvillii*), orange-throated whiptail (*Aspidocelis hyperythra*), coastal whiptail (*Aspidoscelis tigris stejneri*), California glossy snake (*Arizona elegans occidentalis*), coast patch-nosed snake (*Salvadora hexalepis virgultea*), red-diamond rattlesnake (*Crotalus ruber*), Cooper's hawk (*Accipiter cooperii*), Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*), yellow warbler (*Setophaga petechia*), yellow-breasted chat (*Icteria virens*), western mastiff bat (*Eumops perotis californicus*), and San Diego desert woodrat (*Neotoma lepida intermedia*). A number of other non-listed special status species are not known or expected to occur in the BSA but could forage in the area, at least occasionally.

Seven of the species that could occur in the BSA (other than as "foraging only" species) are Identified Species and are covered under conservation provisions of the NCCP/HCP. Those that are not "Identified Species" include the patch-nosed and glossy snakes, Cooper's hawk, yellow warbler, yellow-breasted chat, and western mastiff bat. Of these, yellow-breasted chat was observed in the BSA and yellow warbler and Cooper's hawk are reported in the area. It is not known whether either glossy or patch-nosed snakes may occur in the BSA, but it is reasonable to conclude that the Proposed Project would not significantly affect local populations, since the habitat displaced or disturbed represents a very small fraction of the available habitat in the area.

#### 4.6.4 Bird Species Protected Under the MBTA and CFGC

Common raptors and migratory song birds protected under the MBTA may nest or roost on existing structures, shrubs, or trees within the Project footprint. Impacts to these species may include temporary habitat loss due to tree trimming and potential temporary displacement during construction activities. Project activities may also temporarily deter wildlife from foraging near the Project footprint. However, short-term potential adverse impacts of the Project on foraging in the surrounding lands are considered minor given that wildlife that currently forage within the BSA are assumed to be acclimated to a human-influenced environment

#### 4.6.4.1 Project Impacts

Impacts associated with the permanent impacts associated with the Class 1 paved bike path include clearing and grubbing of both native and non-native vegetation and the encroachment and/or removal of mature non-native ornamental trees along Jamboree Road. The majority of the Class 1 paved bike path will be installed along an approximately 11-foot wide sidewalk and retaining wall. The remaining 6-9 feet of impacts would occur in areas that were previously revegetated habitats created to rectify impacts from the construction of Jamboree Road 15-20 years ago. These permanent impacts will include vegetation removal and grading.

Implementation of the Project may; however, result in indirect temporary impacts during construction to individual special-status wildlife species that occur adjacent to the Project footprint. Uncontrolled surface runoff could transport sediment (i.e., from shoulder grading or stockpile areas) and equipment fluids outside the Project limits, elevated dust levels could occur during construction, and noxious and invasive plant species could spread into adjacent communities. Such impacts could potentially decrease the suitability of habitats adjacent to the Project footprint to support special-status wildlife, leading to potential impacts to individual species.

#### 4.6.4.2 Avoidance and Minimization Efforts/Compensatory Mitigation

Avoidance and Minimization Measures BIO-2 through BIO-4 presented above in Section 4.4.3, and BIO-5, below provide the means to avoid and minimize impacts to special-status wildlife species and habitats potentially suitable for such species that may occur in or adjacent to the Project footprint.

- **BIO-5** Impacts to nesting birds can be avoided by conducting project activities involving clearing and grubbing, grading, and/or construction using heavy equipment during the non-breeding season which extends from September 15 to February 15 for most species, and from July 1 to January 15 for raptors (birds of prey e.g., owls, hawks, falcons, etc.). If clearing and grubbing or construction cannot avoid the nesting season, the following measures would be implemented:
  - a. If project activities may not be constrained to the non-breeding season, a Nesting Bird Management Plan (NBMP) is recommended to be developed and submitted to CDFW prior to construction, with a request for agency concurrence with proposed nest protection measures and construction area buffers for different avian species. The NBMP will include specifications consistent with measures b and c, below, to avoid impacts to nesting birds during construction activity.
  - b. Prior to work during the avian nesting season (February 15 to September 15, or January 15 to July 1 for raptors), a qualified

biologist will conduct a pre-construction survey of all suitable habitat for the presence of nesting birds within 500 feet of project construction activities on the west side of Jamboree Road. The nesting survey will be conducted not more than 7 days prior to vegetation removal or construction activities. If vegetation removal or construction activities are delayed for more than 7 days after the survey, a new pre-construction nesting bird survey will be required.

- c. If active nests are identified during the pre-construction survey, an appropriate buffer (e.g., as prescribed in the NBMP) shall be established that restricts or prohibits construction activities until the nest is inactive. Buffers for least Bell's vireo will not be less than 500' unless reduced buffers are approved by USFWS and CDFW for this species. However, the NBMP may prescribe smaller buffers for other birds based on tolerances of different species and site-specific conditions. Buffers may be refined by a qualified biological monitor based on field observations of individual bird behavior.
- d. A qualified biologist will delineate and flag buffer limits for construction avoidance until the nesting cycle is complete (i.e., nestling have fledged or the nest has failed). The qualified biologist may also recommend other measures to minimize disturbances to the nest, which may include, but are not limited to, full-time monitoring, work allowed only during limited time periods, restricting use of particular equipment, placement of sound barriers or visual barriers (e.g., noise blankets, straw bales).

With the implementation of BIO-2 through BIO-5 indirect Project impacts to specialstatus wildlife species and suitable habitats occurring adjacent to the Project footprint would be avoided and minimized to the extent feasible during Project implementation. Additionally, Incidental Take of Identified Species is authorized by the County's compliance with and participation in the NCCP/HCP including expending part of its allotted "In-Reserve" take credits commensurate with the displacement of acreage within Peters Canyon Regional Park, which is part of the NCCP/HCP Reserve.

# 5. Conclusions and Regulatory Determinations

#### 5.1 Federal Endangered Species Act Consultation Summary

USFWS was contacted for clarification regarding the application of take credits for the Proposed Project under the NCCP/HCP, as discussed below. As incidental take for the California gnatcatcher is authorized under the NCCP/HCP and no take authorization is being sought for least Bell's vireo, no further consultation was warranted. Further information is presented below regarding the Proposed Project and determinations of effects on federally listed species.

The Project may affect, but would be not likely to adversely affect coastal California gnatcatcher by displacing or temporarily disturbing up to almost 1.57 acres of suitable gnatcatcher habitat. California gnatcatcher is an Identified Species that is covered by Incidental Take authorization for planned activities by participating landowners through implementation of the NCCP/HCP and its conservation guidelines. USFWS has issued incidental take authorization to participating landowners authorizing take of the gnatcatcher incidental to planned activities, subject to and in accordance with the NCCP/HCP and the Implementing Agreement (Implementing Agreement Section 8.3.1 (b)). The NCCP/HCP established the Reserve system to conserve large areas containing natural habitat for wildlife while also allowing for certain uses and limited encroachment based on expected future land uses. In this case, construction of the Class 1 bikeway extension is expected to meet the applicable NCCP/HCP standard for such allowances for "construction, operation, and maintenance of new facilities necessary to support permitted recreation uses" and/or would otherwise be considered a necessary infrastructure improvement. However, as this particular project was not specifically identified in the NCCP/HCP as a Planned Activity, the limited impact to natural areas in the Reserve is understood to require a deduction from the County's allotment of credits which are reserved as compensation for just such impacts. This will involve deducting credits from the County's allotment of In-Reserve Credits (which allow for removal of CSS and other natural areas on a "per acre" basis) equivalent to the acreage displaced. This action is not considered mitigation because the NCCP/HCP allows for such impacts, and already provided "mitigation" at the regional level. The deduction of credits is simply necessary to conform with the provisions established under the NCCP/HCP and the Implementing Agreement which covers such activities. Therefore, as a specific requirement for this project Orange County Public Works will submit an intent to utilize credits from its remaining allotment to CDFW and USFWS in writing. The credit deduction will be counted at a 1:1 ratio to the acreage of native coastal sage scrub permanently displaced by the project. The accounting of credits expended will be reported in the annual status report and annual work plan which are transmitted to the Natural Communities Coalition.

It should also be noted that the Proposed Project will be constructed within areas that were previously substantially disturbed by past construction, successive wildfires, and subsequent habitat restoration of the upland areas. With the implementation of avoidance and mitigation measures BIO-1 through BIO-4 identified in Section 4, encroachment during construction into adjacent natural communities and direct and

indirect temporary impacts to those communities would be avoided and minimized. Furthermore, revegetation with appropriate native plant materials will be provided in areas subject to temporary disturbance adjacent to the new bikeway and retaining wall as described in mitigation measure BIO-1.

In the absence of any mitigation, the Proposed Project has the potential to indirectly affect least Bell's vireo. The Proposed Project will not directly impact any riparian habitat that may be potentially suitable for this species in the vicinity of the project. No least Bell's vireo have been observed within 300 feet of the construction limits in recent year. However, the potential exists for this migratory species to occur in areas that could be indirectly affected by the project during the breeding season. Implementation of BIO-2 through BIO-5 will assure that such potential impacts are avoided and minimized to the extent feasible during Project implementation, first by avoiding any construction in the area during the breeding season to the extent feasible, then by prohibiting construction within 500 feet of any active least Bell's vireo nesting sites during the breeding season. With implementation of these measures, the Proposed Project will have **no effect** on least Bell's vireo.

Table 4, below, identifies the determination of Project Effects on federally listed species considered.

Common Name	Scientific Name	Status	Effect Determination				
	Plan	Its					
Verbesina dissita	big-leaved crownbeard	FT	No Effect (Absent)				
Dudleya stolonifera	Laguna Beach liveforever	FT	No Effect (Absent)				
Insect							
Euphydryas editha quino	Quino checkerspot butterfly	FE	No Effect (Absent)				
	Brachiopods						
Branchinecta sandiegonensis	San Diego fairy shrimp	FE	No Effect (Absent)				
Streptocephalus woottoni	Riverside fairy shrimp	FE	No Effect (Absent)				
	Fis	h					
Catostomus santaanae	Santa Ana sucker	FT	No Effect (Absent)				
Oncorhynchus mykiss	Southern California steelhead	FE	No Effect (Absent)				
	Amphit	pians					
Anaxyrus californicus	arroyo toad	FE	No Effect (Absent)				
	Bird	ls					
Sterna antillarum browni	California least tern	FE	No Effect (Absent)				
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FT	No Effect (Absent)				
Polioptila californica californica	coastal California gnatcatcher	FT	Present in project vicinity. May affect, not likely to adversely affect. Covered under NCCP/HCP.				
Vireo bellii pusillus	least Bell's vireo	FE	Species detected in the vicinity. No effect with implementation of avoidance measures.				
Rallus longirostris levipes	light-footed Ridgway's rail	FE	No Effect (Absent)				
Empidonax traillii extimus	southwestern willow flycatcher	FE	No Effect (Absent)				
Charadrius nivosus nivosus	western snowy plover	FT	No Effect (Absent)				
	Mamn	nals					
Perognathus longimembris pacificus	pacific pocket Mouse	FE	No Effect (Absent)				
FE: Federally Endangered FT: Feder	ally Threatened						

Table 4:	Detemination of	of Project	Effects on	Federally	y-Listed	Species
----------	-----------------	------------	------------	-----------	----------	---------

#### 5.2 Essential Fish Habitat Consultation Summary

NMFS's Essential Fish Habitat (EFH) Mapper (NMFS 2018) was queried to determine if the BSA falls within ESH under jurisdiction of NMFS. It was determined that no EFH

Areas Protected from Fishing or Habitat Areas of Particular Concern were identified for the BSA

#### 5.3 Wetlands and Other Waters Coordination Summary

Several unnamed drainages transect the BSA via at least two underground culverts, but none are exposed in any areas where the Proposed Project may affect them in the BSA. As project activities are constrained to the narrow strip close to Jamboree Road where no potentially jurisdictional features occur, regulatory permitting under Sections 404 and 401 of the CWA and Section 1600 of the CFGC will not be required. Furthermore, with implementation of measures BIO-2 through BIO-4 presented in Section 4.4.3, encroachment and other indirect impacts to aquatic features or jurisdictional areas in the project vicinity would also be avoided. Therefore, coordination with regulatory agencies with regard to regulatory permits including USACE, CDFW, and RWCQB, is not anticipated to be warranted.

#### 5.4 Invasive Species

Invasive plant species are scarce to common within the Project footprint, which includes the hillsides and flat areas adjacent to Jamboree Road, the paved surface of Jamboree Road, and adjacent shoulders. Since Project activities will occur within Jamboree Road Right-of-Way consisting primarily of the paved roadway and disturbed areas adjacent to the roadway where regular maintenance activities occur, the spread of invasive species due to Project implementation is not anticipated. No invasive species will be planted or replanted in association with the Proposed Project.

#### 5.5 Migratory Bird Treaty Act

A number of migratory and resident bird species were detected during the field surveys and are noted in the compendium in Appendix F. Virtually all birds, with a few exceptions for non-native species such as European starlings, English house sparrows, rock doves (pigeons), and non-migratory game birds such as quail, pheasant, and grouse, are protected under the MBTA. Moreover, Sections 3503, 3503.5, 3505, 3513 of the California Fish and Game Code (CFGC) protect all birds, birds of prey, and all nongame birds, as well as their eggs and nests. Sections 3503 and 3503.5 of the CFGC stipulate that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, and that is it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird. Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

If construction of the Proposed Project requires work during the nesting season, the implementation of measure BIO-5, presented in Section 4.6.4.2, would avoid impacts to avian species that are afforded protection under the MBTA and the CFGC.

#### 6. References

- Baldwin, J.C. (ed.). 2012. *The Jepson Manual: Higher Plants of California*. Berkeley: University of California Press
- Beier, P & Penrod, K. & Luke, C. & W. Spencer. 2006. South Coast Missing Linkages: restoring connectivity to wildlands in the largest metropolitan area in the United States. Connectivity and conservation. Available online at <u>http://www.scwildlands.org/reports/SCMLRegionalReport.pdf</u>
- California Department of Transportation (Caltrans). 2013. Standard Environmental Reference. Available online at <u>http://www.dot.ca.gov/ser/</u>.
- California Department of Fish and Wildlife (CDFW). 2020. California Wildlife Habitat Relationships, Biogeographic Data Branch. Available online at <u>https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range.</u>
- California Native Plant Society, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Available Online at <u>http://www.rareplants.cnps.org</u>. List generated August 19, 2020.
- California Natural Diversity Database (CNDDB). 2020. Rare Find Full Expanded Report for the Orange, Black Star Canyon, El Toro, Tustin, Newport Beach, Anaheim, La Habra, Yorba Linda, and Prado Dam, California Quadrangles. California Department of Fish and Wildlife, Natural Diversity Data Base. Commercial Version. List generated July 16, 2020.
- County of Orange. 1996a. Natural Community Conservation Plan & Habitat Conservation Plan. County of Orange Central & Coastal Subregion. Parts I & II: NCCP/HCP. July 17. Available at: <u>https://occonservation.org/wp-</u> <u>content/uploads/2015/04/NCCP-Parts-I-II-Plan.pdf</u>.
  - \_\_\_\_\_. 1996b. Natural Community Conservation Plan & Habitat Conservation Plan. County of Orange Central & Coastal Subregion. Parts I & II: NCCP/HCP. July 17. Available at: <u>https://occonservation.org/wp-content/uploads/2015/04/NCCP-Part-III-EIR.pdf</u>.
- Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resources Agency.
- Michael Baker International. May, 2016. Peters Canyon Regional Park (PECA) Resource Management Plan – Draft Biological Resources Report. Prepared for Orange County Parks and Recreation.
- National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS). 2018a. California Species List Tools. Available at: <u>https://archive.fisheries.noaa.gov/wcr/maps\_data/california\_species\_list\_tools.html</u> . Report generated July 6, 2020 for the Orange Quadrangle.

2018b. Essential Fish Habitat Mapper. Available at:

https://www.habitat.noaa.gov/application/efhmapper/index.html. Report generated August 19, 2020

- Sawyer, J. O., Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation, Second Edition*. California Native Plant Society, Sacramento.
- U.S. Fish and Wildlife Service (USFWS). 2020. IPaC Information for Planning and Consultation. Available online at <u>http://ecos.fws.gov/ipac</u>.
  - \_\_\_\_\_. 2001. Least Bell's Vireo Survey Guidelines. Carlsbad, CA Fish and Wildlife Office. June 28, 4 pp. Available online at: <u>https://www.fws.gov/ventura/docs/species/protocols/lbv/leastbellsvireo\_survey-guidelines.pdf</u>
  - .1997. Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Protocol. Carlsbad, CA Fish and Wildlife Office. June 28, 4 pp
  - \_\_\_\_.1996. Biological and Conference Opinions for the Central and Coastal Subregion Natural Community Conservation Plan and Habitat Conservation Plan, County of Orange, California. June 28, Available online at: <u>https://www.fws.gov/ventura/docs/species/protocols/cagn/coastalgnatcatcher\_survey-guidelines.pdf</u>

# 7. Appendices

### **APPENDIX A – CNPS and CNDDB Lists**



#### California Department of Fish and Wildlife



#### California Natural Diversity Database

Query Criteria: Quad<span style='color:Red'> IS </span>(La Habra (3311788)<span style='color:Red'> OR </span>Yorba Linda (3311787)<span style='color:Red'> OR </span>Prado Dam (3311786)<span style='color:Red'> OR </span>Anaheim (3311778)<span style='color:Red'> OR </span>Orange (3311777)<span style='color:Red'> OR </span>Black Star Canyon (3311776)<span style='color:Red'> OR </span>Newport Beach (3311768)<span style='color:Red'> OR </span>Tustin (3311767)<span style='color:Red'> OR </span>El Toro (3311766))

Peters Canyon Bikeway Extension Project 9-Quad CNDDB Search 08-20-2020

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia villosa var. aurita	PDNYC010P1	None	None	G5T2?	S2	1B.1
chaparral sand-verbena						
Accipiter cooperii	ABNKC12040	None	None	G5	S4	WL
Cooper's hawk						
Agelaius tricolor	ABPBXB0020	None	Threatened	G2G3	S1S2	SSC
tricolored blackbird						
Aimophila ruficeps canescens	ABPBX91091	None	None	G5T3	S3	WL
southern California rufous-crowned sparrow						
Ammodramus savannarum	ABPBXA0020	None	None	G5	S3	SSC
grasshopper sparrow						
Anaxyrus californicus	AAABB01230	Endangered	None	G2G3	S2S3	SSC
arroyo toad						
Anniella stebbinsi	ARACC01060	None	None	G3	S3	SSC
Southern California legless lizard						
Antrozous pallidus	AMACC10010	None	None	G5	S3	SSC
pallid bat						
Aphanisma blitoides	PDCHE02010	None	None	G3G4	S2	1B.2
aphanisma						
Aquila chrysaetos	ABNKC22010	None	None	G5	S3	FP
golden eagle						
Ardea herodias	ABNGA04010	None	None	G5	S4	
great blue heron						
Arizona elegans occidentalis	ARADB01017	None	None	G5T2	S2	SSC
California glossy snake						
Asio otus	ABNSB13010	None	None	G5	S3?	SSC
long-eared owl						
Aspidoscelis hyperythra	ARACJ02060	None	None	G5	S2S3	WL
orange-throated whiptail						
Aspidoscelis tigris stejnegeri	ARACJ02143	None	None	G5T5	S3	SSC
coastal whiptail						
Astragalus brauntonii	PDFAB0F1G0	Endangered	None	G2	S2	1B.1
Braunton's milk-vetch						
Astragalus hornii var. hornii	PDFAB0F421	None	None	GUT1	S1	1B.1
Horn's milk-vetch						
Athene cunicularia	ABNSB10010	None	None	G4	S3	SSC
purrowing owi						





Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Atriplex coulteri	PDCHE040E0	None	None	G3	S1S2	1B.2
Coulter's saltbush						
Atriplex pacifica	PDCHE041C0	None	None	G4	S2	1B.2
south coast saltscale						
Atriplex parishii	PDCHE041D0	None	None	G1G2	S1	1B.1
Parish's brittlescale						
Atriplex serenana var. davidsonii	PDCHE041T1	None	None	G5T1	S1	1B.2
Davidson's saltscale						
Baccharis malibuensis	PDAST0W0W0	None	None	G1	S1	1B.1
Malibu baccharis						
Bombus crotchii	IIHYM24480	None	Candidate	G3G4	S1S2	
Crotch bumble bee			Endangered			
Branchinecta sandiegonensis	ICBRA03060	Endangered	None	G2	S2	
San Diego fairy shrimp						
Brodiaea filifolia	PMLIL0C050	Threatened	Endangered	G2	S2	1B.1
thread-leaved brodiaea						
Buteo regalis	ABNKC19120	None	None	G4	S3S4	WL
ferruginous hawk						
Buteo swainsoni	ABNKC19070	None	Threatened	G5	S3	
Swainson's hawk						
California Walnut Woodland	CTT71210CA	None	None	G2	S2.1	
California Walnut Woodland						
Calochortus plummerae	PMLIL0D150	None	None	G4	S4	4.2
Plummer's mariposa-lily						
Calochortus weedii var. intermedius	PMLIL0D1J1	None	None	G3G4T2	S2	1B.2
				0.10	<i></i>	
Calystegia felix	PDCON040P0	None	None	G1Q	S1	1B.1
lucky morning-glory		News	Maria	05700	00	000
	ABPBG02095	None	None	G513Q	53	550
		Threatened	Nono	61	64	
Santa Ana sucker	AFCJC02190	Inrealened	None	GI	51	
Contromadia partui sen australis		Nono	Nono	COTO	60	10.1
southern tarnlant	FDAS14R0F4	None	NULLE	0312	52	10.1
Centromadia nungens ssn. Jaevis	PDAST4R0R4	None	None	G3G4T2	<b>S</b> 2	1B 1
smooth tarplant		None	NONE	030412	52	10.1
Chaetodious fallax fallax	AMAED05031	None	None	G5T3T4	\$3\$4	SSC
northwestern San Diego pocket mouse		None	None	001014	0004	000
Charadrius alexandrinus nivosus	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
western snowy plover					2200	
Chloropyron maritimum ssp. maritimum	PDSCR0J0C2	Endangered	Endangered	G4?T1	S1	1B.2
salt marsh bird's-beak						





Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Choeronycteris mexicana	AMACB02010	None	None	G4	S1	SSC
Mexican long-tongued bat						
Chorizanthe parryi var. fernandina	PDPGN040J1	None	Endangered	G2T1	S1	1B.1
San Fernando Valley spineflower						
Chorizanthe polygonoides var. longispina	PDPGN040K1	None	None	G5T3	S3	1B.2
long-spined spineflower						
Cicindela gabbii	IICOL02080	None	None	G2G4	S1	
western tidal-flat tiger beetle						
Cicindela hirticollis gravida	IICOL02101	None	None	G5T2	S2	
sandy beach tiger beetle						
Cicindela latesignata latesignata	IICOL02113	None	None	G2G4T1T2	S1	
western beach tiger beetle						
Coccyzus americanus occidentalis	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
western yellow-billed cuckoo						
Coelus globosus	IICOL4A010	None	None	G1G2	S1S2	
globose dune beetle						
Coturnicops noveboracensis	ABNME01010	None	None	G4	S1S2	SSC
yellow rail						
Crotalus ruber	ARADE02090	None	None	G4	S3	SSC
red-diamond rattlesnake						
Danaus plexippus pop. 1	IILEPP2012	None	None	G4T2T3	S2S3	
monarch - California overwintering population				0.0		
Dudleya multicaulis	PDCRA040H0	None	None	G2	S2	1B.2
				0.5	0004	
Elanus leucurus	ABNKC06010	None	None	G5	\$3\$4	FP
		Friday wanted	<b>F</b> undamental	0570	64	
empidonax trailli extimus	ABPAE33043	Endangered	Endangered	G512	51	
		Nono	Nono	C2C4	62	880
western pond turtle	ARAAD02030	None	None	6364	33	330
Fremonhila alnestris actia		None	None	G5T4O	S/	\\/I
California horned lark	ABFATUZUTT	None	NONE	9314Q	34	VVL
Friastrum densifolium ssp. sanctorum		Endangered	Endangered	G4T1	S1	1B 1
Santa Ana River woollystar		Enddingered	Enddingered	0411	01	10.1
Fryngium aristulatum var. parishii	PDAP107042	Endangered	Endangered	G5T1	S1	1B 1
San Diego button-celery		Enddigorod	Endangorod	0011	01	10.1
Eumops perotis californicus	AMACD02011	None	None	G5T4	S3S4	SSC
western mastiff bat						
Euphydryas editha quino	IILEPK405L	Endangered	None	G5T1T2	S1S2	
quino checkerspot butterfly			-	-		
Falco peregrinus anatum	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
American peregrine falcon						





Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Glyptostoma gabrielense	IMGASB1010	None	None	G2	S2	
San Gabriel chestnut						
Haliaeetus leucocephalus	ABNKC10010	Delisted	Endangered	G5	S3	FP
bald eagle			-			
Helianthus nuttallii ssp. parishii	PDAST4N102	None	None	G5TX	SX	1A
Los Angeles sunflower						
Hesperocyparis forbesii	PGCUP040C0	None	None	G2	S2	1B.1
Tecate cypress						
Horkelia cuneata var. puberula	PDROS0W045	None	None	G4T1	S1	1B.1
mesa horkelia						
Icteria virens	ABPBX24010	None	None	G5	S3	SSC
yellow-breasted chat						
Isocoma menziesii var. decumbens	PDAST57091	None	None	G3G5T2T3	S2	1B.2
decumbent goldenbush						
Lasiurus cinereus	AMACC05030	None	None	G5	S4	
hoary bat						
Lasthenia glabrata ssp. coulteri	PDAST5L0A1	None	None	G4T2	S2	1B.1
Coulter's goldfields						
Laterallus jamaicensis coturniculus	ABNME03041	None	Threatened	G3G4T1	S1	FP
California black rail						
Lepechinia cardiophylla	PDLAM0V020	None	None	G3	S2S3	1B.2
heart-leaved pitcher sage						
Lepidium virginicum var. robinsonii	PDBRA1M114	None	None	G5T3	S3	4.3
Robinson's pepper-grass						
Monardella australis ssp. jokerstii	PDLAM18112	None	None	G4T1?	S1?	1B.1
Jokerst's monardella						
Monardella hypoleuca ssp. intermedia	PDLAM180A4	None	None	G4T2?	S2?	1B.3
intermediate monardella						
Myotis yumanensis	AMACC01020	None	None	G5	S4	
Yuma myotis						
Nama stenocarpa	PDHYD0A0H0	None	None	G4G5	S1S2	2B.2
mud nama						
Nasturtium gambelii	PDBRA270V0	Endangered	Threatened	G1	S1	1B.1
Gambel's water cress						
Navarretia prostrata	PDPLM0C0Q0	None	None	G2	S2	1B.2
prostrate vernal pool navarretia				000 (70	00	10.0
Nemacaulis denudata var. denudata	PDPGN0G011	None	None	G3G412	52	1B.2
		Nega	Nee -	057074	0004	000
Neoroma lepida intermedia	AMAFF08041	None	None	G51314	5354	550
		Nega	Nee -	00	00	40.0
chaparral polina	PIVIAGAU80E0	inone	None	63	33	IB.Z





Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Nyctinomops femorosaccus	AMACD04010	None	None	G4	S3	SSC
pocketed free-tailed bat						
Nyctinomops macrotis	AMACD04020	None	None	G5	S3	SSC
big free-tailed bat						
Oncorhynchus mykiss irideus pop. 10	AFCHA0209J	Endangered	None	G5T1Q	S1	
steelhead - southern California DPS						
Onychomys torridus ramona	AMAFF06022	None	None	G5T3	S3	SSC
southern grasshopper mouse						
Orcuttia californica	PMPOA4G010	Endangered	Endangered	G1	S1	1B.1
California Orcutt grass						
Pandion haliaetus	ABNKC01010	None	None	G5	S4	WL
osprey						
Panoquina errans	IILEP84030	None	None	G4G5	S2	
wandering (=saltmarsh) skipper						
Passerculus sandwichensis beldingi	ABPBX99015	None	Endangered	G5T3	S3	
Belding's savannah sparrow						
Penstemon californicus	PDSCR1L110	None	None	G3	S2	1B.2
California beardtongue						
Pentachaeta aurea ssp. allenii	PDAST6X021	None	None	G4T1	S1	1B.1
Allen's pentachaeta						
Perognathus longimembris pacificus	AMAFD01042	Endangered	None	G5T1	S1	SSC
Pacific pocket mouse						
Phrynosoma blainvillii	ARACF12100	None	None	G3G4	S3S4	SSC
coast horned lizard						
Polioptila californica californica	ABPBJ08081	Threatened	None	G4G5T2Q	S2	SSC
coastal California gnatcatcher						
Pseudognaphalium leucocephalum	PDAST440C0	None	None	G4	S2	2B.2
white rabbit-tobacco						
Rallus obsoletus levipes	ABNME05014	Endangered	Endangered	G5T1T2	S1	FP
light-footed Ridgway's rail						
Rhinichthys osculus ssp. 3	AFCJB3705K	None	None	G5T1	S1	SSC
Santa Ana speckled dace						
Riparia riparia	ABPAU08010	None	Threatened	G5	S2	
bank swallow						
Riversidian Alluvial Fan Sage Scrub	CTT32720CA	None	None	G1	S1.1	
Riversidian Alluvial Fan Sage Scrub						
Salvadora hexalepis virgultea	ARADB30033	None	None	G5T4	S2S3	SSC
coast patch-nosed snake						
Senecio aphanactis	PDAST8H060	None	None	G3	S2	2B.2
chaparral ragwort						
Setophaga petechia	ABPBX03010	None	None	G5	S3S4	SSC
vellow warbler						





Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFV SSC or FP
Sidalcea neomexicana	PDMAL110J0	None	None	G4	S2	2B.2
salt spring checkerbloom						
Sorex ornatus salicornicus	AMABA01104	None	None	G5T1?	S1	SSC
southern California saltmarsh shrew						
Southern California Arroyo Chub/Santa Ana Sucker Stream	CARE2330CA	None	None	GNR	SNR	
Southern California Arroyo Chub/Santa Ana Sucker Stream						
Southern Coast Live Oak Riparian Forest	CTT61310CA	None	None	G4	S4	
Southern Coast Live Oak Riparian Forest						
Southern Coastal Salt Marsh	CTT52120CA	None	None	G2	S2.1	
Southern Coastal Salt Marsh						
Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	
Southern Cottonwood Willow Riparian Forest						
Southern Dune Scrub	CTT21330CA	None	None	G1	S1.1	
Southern Dune Scrub						
Southern Foredunes	CTT21230CA	None	None	G2	S2.1	
Southern Foredunes						
Southern Interior Cypress Forest	CTT83230CA	None	None	G2	S2.1	
Southern Interior Cypress Forest						
Southern Riparian Scrub	CTT63300CA	None	None	G3	S3.2	
Southern Riparian Scrub						
Southern Sycamore Alder Riparian Woodland	CTT62400CA	None	None	G4	S4	
Southern Sycamore Alder Riparian Woodland						
Southern Willow Scrub	CTT63320CA	None	None	G3	S2.1	
Southern Willow Scrub						
Spea hammondii	AAABF02020	None	None	G3	S3	SSC
western spadefoot						
Sternula antillarum browni	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
California least tern		<u>j</u>	3.			
Streptocephalus woottoni	ICBRA07010	Endangered	None	G1G2	S1S2	
Riverside fairy shrimp						
Suaeda esteroa	PDCHE0P0D0	None	None	G3	S2	1B.2
estuary seablite						
Symphyotrichum defoliatum	PDASTE80C0	None	None	G2	S2	1B.2
San Bernardino aster	12/10/20000	Hono		02	02	10.2
Taricha torosa	4444F02032	None	None	G4	S4	SSC
Coast Range newt	70000002002	None	None	04	04	000
		None	None	G5	53	222
American badger	AWA31 04010	None	None	65	00	000
Themponhis hammondii		None	None	G4	\$3\$4	SSC
two-strined gartersnake	7170000100	140116		94	0004	000
Tryonia imitator		None	None	62	\$2	
mimic tryonia (=California brackishwater snail)			INDIG	02	02	

Commercial Version -- Dated August, 1 2020 -- Biogeographic Data Branch Report Printed on Thursday, August 20, 2020





Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Vireo bellii pusillus	ABPBW01114	Endangered	Endangered	G5T2	S2	
least Bell's vireo						

Record Count: 124



\*The database used to provide updates to the Online Inventory is under construction. View updates and changes made since May 2019 here.

#### **Plant List**

61 matches found. Click on scientific name for details

#### Search Criteria Found in Quads 3311788, 3311787, 3311786, 3311778, 3311777, 3311776, 3311768 3311767 and 3311766; Q Modify Search Criteria A Export to Excel Modify Columns 2: Modify Sort Remove Photos CA BloomingRare State Global Common Scientific Name Photo Family Lifeform Name Period Plant Rank Rank Rank red sand-Abronia maritima Nyctaginaceae perennial herb Feb-Nov 4.2 S3? G4 verbena 2003 Christopher L. Christie Abronia villosa var. chaparral (Jan) 1B.1 S2 G5T2? Nyctaginaceae annual herb sand-verbena Mar-Sep aurita 2011 Duncan S. Bell Aphanisma G3G4 Chenopodiaceae annual herb Feb-Jun 1B.2 S2 aphanisma blitoides 2015 Keir Morse Braunton's Fabaceae perennial herb Jan-Aug 1B.1 S2 G2 <u>Astragalus</u> milk-vetch brauntonii



2015 Ron Vanderhoff



2006 Steve Matson



2015 Robert Steers





2009 Stanley Spencer

no photo available

<u>Atriplex coulteri</u>	Coulter's saltbush	Chenopodiaceae	perennial herb	Mar-Oct	1B.2	S1S2	G3
<u>Atriplex pacifica</u>	South Coast saltscale	Chenopodiaceae	annual herb	Mar-Oct	1B.2	S2	G4
<u>Atriplex parishii</u>	Parish's brittlescale	Chenopodiaceae	annual herb	Jun-Oct	1B.1	S1	G1G2
<u>Atriplex serenana</u> <u>var. davidsonii</u>	Davidson's saltscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S1	G5T1
<u>Baccharis</u> <u>malibuensis</u>	Malibu baccharis	Asteraceae	perennial deciduous shrub	Aug	1B.1	S1	G1
Brodiaea filifolia	thread-leaved brodiaea	Themidaceae	perennial bulbiferous	Mar-Jun	1B.1	S2	G2

herb



2001 Salvatore Zimmitti



009 Barry Breckling





009 Thomas toughton





<u>Calandrinia breweri</u>	Brewer's calandrinia	Montiaceae	annual herb	(Jan) Mar-Jun	4.2	S4	G4	20
<u>Calochortus</u> <u>catalinae</u>	Catalina mariposa lily	Liliaceae	perennial bulbiferous herb	(Feb) Mar-Jun	4.2	S3S4	G3G4	20
<u>Calochortus</u> plummerae	Plummer's mariposa lily	Liliaceae	perennial bulbiferous herb	May-Jul	4.2	S4	G4	20 St
<u>Calochortus weedii</u> <u>var. intermedius</u>	intermediate mariposa lily	Liliaceae	perennial bulbiferous herb	May-Jul	1B.2	S2	G3G4T2	20
<u>Calystegia felix</u>	lucky morning-glory	Convolvulaceae	annual rhizomatous herb	Mar-Sep	1B.1	S1	G1Q	

2013 Anuja Parikh and Nathan Gale

3 5 M 64	100	110	10
1000		1	30
and the second	9	SIGT	
		N.K.	in the
10	Ser.	1	26
19	4	100	
lan Cain	100	10001	1.0

lan Cain



2003 Lynn Watson



2008 Dean Wm. Taylor, Ph.D.



2012 CNPS, San Luis Obispo Chapter



2001 Kevin Merk



2010 Anna Bennett

<u>Camissoniopsis</u> <u>Iewisii</u>	Lewis' evening- primrose	Onagraceae	annual herb	Mar-May (Jun)	3	S4	G4	lan
<u>Centromadia parryi</u> ssp. australis	southern tarplant	Asteraceae	annual herb	May- Nov	1B.1	S2	G3T2	200
<u>Centromadia</u> pungens ssp. laevis	smooth tarplant	Asteraceae	annual herb	Apr-Sep	1B.1	S2	G3G4T2	200
<u>Chloropyron</u> <u>maritimum ssp.</u> <u>maritimum</u>	salt marsh bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct (Nov)	1B.2	S1	G4?T1	201 Obi
<u>Chorizanthe parryi</u> <u>var. fernandina</u>	San Fernando Valley spineflower	Polygonaceae	annual herb	Apr-Jul	1B.1	S1	G2T1	200
<u>Chorizanthe</u> polygonoides var. longispina	long-spined spineflower	Polygonaceae	annual herb	Apr-Jul	1B.2	S3	G5T3	201

<u>Convolvulus</u> small- Convolvulaceae annual herb Mar-Jul 4.2 S4 G4 simulans morning-glory



2012 Neal Kramer



2007 Neal Kramer



2012 Anuja Parikh and Nathan Gale





2015 Ron Vanderhoff



2010 Justin M. Wood

<u>Deinandra</u> paniculata	paniculate tarplant	Asteraceae	annual herb	(Mar) Apr-Nov (Dec)	4.2	S4	G4
<u>Dodecahema</u> leptoceras	slender- horned spineflower	Polygonaceae	annual herb	Apr-Jun	1B.1	S1	G1
<u>Dudleya multicaulis</u>	many- stemmed dudleya	Crassulaceae	perennial herb	Apr-Jul	1B.2	S2	G2
<u>Dudleya stolonifera</u>	Laguna Beach dudleya	Crassulaceae	perennial stoloniferous herb	May-Jul	1B.1	S1	G1
<u>Eriastrum</u> densifolium ssp. sanctorum	Santa Ana River woollystar	Polemoniaceae	perennial herb	Apr-Sep	1B.1	S1	G4T1
<u>Eryngium</u> aristulatum var. parishii	San Diego button-celery	Apiaceae	annual / perennial herb	Apr-Jun	1B.1	S1	G5T1

Harpagonella

palmeri

<u>Hordeum</u>

intercedens

Palmer's

grapplinghook

vernal barley Poaceae



2013 Keir Morse



2009 Christopher L. Christie

no photo available

perennial Helianthus nuttallii Los Angeles . rhizomatous Aug-Oct 1A G5TH Asteraceae SH sunflower ssp. parishii herb Hesperocyparis Tecate perennial 1B.1 S2 G2 Cupressaceae forbesii cypress evergreen tree

Boraginaceae

annual herb

annual herb

Mar-May 4.2 S3

Mar-Jun 3.2

S3S4 G3G4

G4



2007 Dr. Mark S. Brunell



2010 Gary A. Monroe



2011 Chris Winchell

<u>Horkelia cuneata</u> <u>var. puberula</u>	mesa horkelia	Rosaceae	perennial herb	Feb-Jul (Sep)	1B.1	S1	G4T1
<u>Juglans californica</u>	Southern California black walnut	Juglandaceae	perennial deciduous tree	Mar-Aug	4.2	S4	G4



2003 Michael Charters

<u>Juncus acutus ssp.</u> leopoldii	southwestern spiny rush	Juncaceae	perennial rhizomatous herb	(Mar) May-Jun	4.2	S4	G5T5	2018
<u>Lasthenia glabrata</u> <u>ssp. coulteri</u>	Coulter's goldfields	Asteraceae	annual herb	Feb-Jun	1B.1	S2	G4T2	2003
<u>Lepechinia</u> cardiophylla	heart-leaved pitcher sage	Lamiaceae	perennial shrub	Apr-Jul	1B.2	S2S3	G3	2003
<u>Lepidium</u> virginicum var. robinsonii	Robinson's pepper-grass	Brassicaceae	annual herb	Jan-Jul	4.3	S3	G5T3	2015
<u>Lilium humboldtii</u> ssp. ocellatum	ocellated Humboldt lily	Liliaceae	perennial bulbiferous herb	Mar-Jul (Aug)	4.2	S4?	G4T4?	





2003 Dean Wm. Taylor



2003 Vince Scheidt



2015 Keir Morse



no photo available

Monardella perennial Jokerst's australis ssp. Lamiaceae rhizomatous Jul-Sep 1B.1 S1 G4T1 monardella herb <u>jokerstii</u> <u>Monardella</u> perennial intermediate hypoleuca ssp. G4T2? Lamiaceae rhizomatous Apr-Sep 1B.3 S2? monardella intermedia herb annual / Nama stenocarpa mud nama Namaceae Jan-Jul 2B.2 S1S2 G4G5 perennial herb perennial **Nasturtium** Gambel's Brassicaceae rhizomatous Apr-Oct 1B.1 S1 G1 gambelii water cress herb prostrate Navarretia vernal pool 1B.1 S2 G2 Polemoniaceae annual herb Apr-Jul prostrata navarretia **Nemacaulis** coast woolly-Apr-Sep 1B.2 S2 G3G4T2 denudata var. Polygonaceae annual herb heads <u>denudata</u> (Mar) 1B.2 S3 G3 Nolina cismontana chaparral Ruscaceae perennial

. nolina



2016 Ron Vanderhoff

no photo available



2010 Chris Winchell



2007 Janell Hillman



2015 Keir Morse

May-Jul

. evergreen

shrub

<u>tomentosa</u>



2005 Santa Monica Mountains National Recreation Area





)8 Jordan Zylstra





2 Ron Vanderhoff

<u>Orcuttia californica</u>	California Orcutt grass	Poaceae	annual herb	Apr-Aug	1B.1	S1	G1	2013 Anna Bennet
Penstemon californicus	California beardtongue	Plantaginaceae	perennial herb	May-Jun (Aug)	1B.2	S2	G3	2008 Jordan Zylstr
Pentachaeta aurea ssp. allenii	Allen's pentachaeta	Asteraceae	annual herb	Mar-Jun	1B.1	S1	G4T1	Version and Allen
<u>Phacelia hubbyi</u>	Hubby's phacelia	Hydrophyllaceae	annual herb	Apr-Jul	4.2	S4	G4	2012 Ron Vanderh
<u>Phacelia</u> <u>ramosissima var.</u> <u>austrolitoralis</u>	south coast branching phacelia	Hydrophyllaceae	perennial herb	Mar-Aug	3.2	S3	G5?T3Q	no photo available
<u>Pickeringia</u> montana var.	woolly chaparral-pea	Fabaceae	evergreen shrub	May- Aug	4.3	S3S4	G5T3T4	

http://www.rareplants.cnps.org/result.html?adv=t&quad=3311788:3311787:3311786:3311... 6/25/2020

Polygala cornuta

Sagittaria sanfordii

Fish's



1996 Christopher L. Christie



2010 Benjamin Smith



2015 Anuja Parikh and Nathan Gale



2015 Keir Morse



2013 Aaron Schusteff



G3

var. fishiae milkwort Aug shrub (Jul) Pseudognaphalium white rabbit-Asteraceae perennial herb Aug-Nov 2B.2 S2 G4 leucocephalum tobacco (Dec) Quercus Engelmann perennial Mar-Jun 4.2 S3 G3 Fagaceae oak deciduous tree engelmannii perennial Coulter's Mar-Jul Romneya coulteri Papaveraceae rhizomatous 4.2 S4 G4 matilija poppy (Aug) herb perennial May-Oct 1B.2 S3 Sanford's . rhizomatous

Alismataceae

herb

(emergent)

arrowhead

perennial

. deciduous

Polygalaceae

May-

4.3 S4 G5T4

http://www.rareplants.cnps.org/result.html?adv=t&quad=3311788:3311787:3311786:3311... 6/25/2020

(Nov)

#### Page 11 of 11

<u>Senecio</u> aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan-Apr (May)	2B.2	S2	G3	2010 Neal Kramer
<u>Sidalcea</u> neomexicana	salt spring checkerbloom	Malvaceae	perennial herb	Mar-Jun	2B.2	S2	G4	2011 Steven Thorsted
<u>Suaeda esteroa</u>	estuary seablite	Chenopodiaceae	perennial herb	(May) Jul-Oct (Jan)	1B.2	S2	G3	2009 Robert Steers
<u>Symphyotrichum</u> <u>defoliatum</u>	San Bernardino aster	Asteraceae	perennial rhizomatous herb	Jul-Nov (Dec)	1B.2	S2	G2	

2009 Bob Allen

AN TRACK

#### **Suggested Citation**

California Native Plant Society, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 25 June 2020].

Search the Inventory
Simple Search
Advanced Search
Glossary

Information
About the Inventory
About the Rare Plant Program

About the Rare Plant Prog CNPS Home Page About CNPS Join CNPS

#### Contributors

The California Database The California Lichen Society California Natural Diversity Database The Jepson Flora Project The Consortium of California Herbaria CalPhotos

#### Questions and Comments

rareplants@cnps.org

© Copyright 2010-2018 California Native Plant Society. All rights reserved.
**APPENDIX B – USFWS Species List** 

# **IPaC** Information for Planning and Consultation

## U.S. Fish & Wildlife Service

Last login July 16, 2020 02:57 PM MDT

# IPaC resource list

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

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

# **Project information**

NAME

Peters Canyon Bikeway

LOCATION

Orange County, California

south far.



### DESCRIPTION

The Peters Canyon Bikeway Project would create a safe cycle lane, starting at Canyon View and following Jamboree Road for approximately 1.2 miles, before continuing on Pioneer Road for a further 1.2 miles. The bikeway would encroach into Peters Canyon Regional Park for approximately 0.9 miles, requiring a potential land take of up to 20 feet to incorporate the bikeway and adjacent walkway.

# Local office

Carlsbad Fish And Wildlife Office

**└** (760) 431-9440**i** (760) 431-5901

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

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

# Endangered species

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

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

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

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

- 1. Log in to IPaC.
- 2. Go to your My Projects list.
- 3. Click PROJECT HOME for this project.
- 4. Click REQUEST SPECIES LIST.

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

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

- 1. Species listed under the <u>Endangered Species Act</u> are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the <u>listing status page</u> for more information.
- 2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and

Atmospheric Administration within the Department of Commerce.

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

# Mammals

NAME	STATUS
Pacific Pocket Mouse Perognathus longimembris pacificus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8080	Endangered
Birds	90
NAME	STATUS
California Least Tern Sterna antillarum browni No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
Coastal California Gnatcatcher Polioptila californica californica There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8178	Threatened
Least Bell's Vireo Vireo bellii pusillus There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5945	Endangered
Light-footed Clapper Rail Rallus longirostris levipes No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6035	Endangered

Southwestern Willow Flycatcher Empidonax traillii extimus There is final critical habitat for this species. Your location is outside the critical habitat. <u>https://ecos.fws.gov/ecp/species/6749</u>

Western Snowy Plover Charadrius nivosus nivosus There is final critical habitat for this species. Your location is outside the critical habitat. <u>https://ecos.fws.gov/ecp/species/8035</u>

# Fishes

NAME

Santa Ana Sucker Catostomus santaanae There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3785

# **Flowering Plants**

NAME

Big-leaved Crownbeard Verbesina dissita No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8049

Laguna Beach Liveforever Dudleya stolonifera No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/7919</u>

# Critical habitats

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

Threatened

Endangered

STATUS

Threatened

STATUS Threatened

Threatened

### THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

# Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

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

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

Additional information can be found using the following links:

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

The birds listed below are birds of particular concern either because they occur on the <u>USFWS Birds of Conservation Concern</u> (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ <u>below</u>. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public

have sighted birds in and around your project area, visit the <u>E-bird data mapping tool</u> (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found <u>below</u>.

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

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

### Breeds Feb 1 to Jul 15

### Allen's Hummingbird Selasphorus sasin

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

https://ecos.fws.gov/ecp/species/9637

### Bald Eagle Haliaeetus leucocephalus

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626 Breeds Jan 1 to Aug 31

Black-chinned Sparrow Spizella atrogularis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9447</u>	Breeds Apr 15 to Jul 31
Burrowing Owl Athene cunicularia This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9737	Breeds Mar 15 to Aug 31
Clark's Grebe Aechmophorus clarkii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Dec 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
Costa's Hummingbird Calypte costae This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9470	Breeds Jan 15 to Jun 10
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <u>https://ecos.fws.gov/ecp/species/1680</u>	Breeds Jan 1 to Aug 31

Lawrence's Goldfinch Carduelis lawrencei This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9464</u>	Breeds Mar 20 to Sep 20
Lewis's Woodpecker Melanerpes lewis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408	Breeds Apr 20 to Sep 30
Long-billed Curlew Numenius americanus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/5511</u>	Breeds elsewhere
Marbled Godwit Limosa fedoa This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Nuttall's Woodpecker Picoides nuttallii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20
Oak Titmouse Baeolophus inornatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9656</u>	Breeds Mar 15 to Jul 15

Rufous Hummingbird selasphorus rufus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/8002</u>	Breeds elsewhere
Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9480</u>	Breeds elsewhere
Song Sparrow Melospiza melodia This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Feb 20 to Sep 5
Spotted Towhee Pipilo maculatus clementae This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/4243	Breeds Apr 15 to Jul 20
Tricolored Blackbird Agelaius tricolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10
Whimbrel Numenius phaeopus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9483</u>	Breeds elsewhere

### Willet Tringa semipalmata

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

Wrentit Chamaea fasciata

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

# **Probability of Presence Summary**

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

# Probability of Presence (III)

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

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

- 1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
- 2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

Breeds Mar 15 to Aug 10

Breeds elsewhere

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

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

## Breeding Season (=)

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

# Survey Effort ()

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

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

## No Data (-)

A week is marked as having no data if there were no survey events for that week.

# Survey Timeframe

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







Oak Titmouse BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)		1111	1111	1111	1111	1111	1111	1111	1111	1111		
Rufous Hummingbird BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	+#++	++##	<b>∥</b> ≢ <b>∥</b> +	++++	++++	++Ш+	+ <b>Ⅲ</b> +Ⅲ	<b>Ⅲ</b> + <b>₩</b> +	++++	++++	++++
Short-billed Dowitcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++	++++	++++	++++	++++	++++	+++1	<b>III</b> +	++++	**** C	1++#
Song Sparrow BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)	IIII	1111	1111	1111	1111				The second	m	HII	IIII
Spotted Towhee BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)	1111				0	<u>_</u>	-	1111	Inn	IIII	1111	1111
Tricolored Blackbird BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++		HD	<del>fill</del>	1111	++++	<mark>+</mark> +++	++++	++++	+++++	++++
-10												

Whimbrel BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	+∎++	++++
Willet BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	<b>#</b> +++	++++	++++	+++∎	++++	++++	+#++	+∎++	++++	++++	+++#	++++
Wrentit BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	IIII	E E E E	TIT	<u>EN ER</u>	1111			IIII	IIII		0	N.

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

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

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

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

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that

may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

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

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

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

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

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

### What are the levels of concern for migratory birds?

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

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

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

### Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa

besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the <u>NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the</u> <u>Atlantic Outer Continental Shelf</u> project webpage.

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

### What if I have eagles on my list?

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

### Proper Interpretation and Use of Your Migratory Bird Report

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

# Facilities

# National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility'

Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

# Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

# Wetlands in the National Wetlands Inventory

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

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

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

PEM1/USAh PEM1C

FRESHWATER FORESTED/SHRUB WETLAND

PFOCh PSSAh PSSCx PSSC PFOC

### <u>PFOFh</u>

LAKE

<u>L1UBHh</u>

<u>L2UBFh</u>

RIVERINE

R4SBA R4SBC R4SBCr R4SBAr

A full description for each wetland code can be found at the National Wetlands Inventory website

### Data limitations

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

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

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

### Data exclusions

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

### Data precautions

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

**APPENDIX C – NMFS Species List** 

#### Species List - Intersection of USGS Topographic Quadrangle Map for Orange with NOAA Fisheries ESA Listed Species, Critical Habitat, Essential Fish Habitat, and MMPA Species Data

November 2016

X = Present on the Quadrangle			ESA ANADROMOUS FISH (E) = Endangered, (T) = Threatened										ESA ANADROMOUS FISH CRITICAL HABITAT							
		COF	COHO CHINOOK STEELHEAD Southern DPS							Southern DPS	СОН	0	CHINC	ЮК	STEELHEAD		Southern DPS			
Quad Name Quad	d Number	SONCC (T)	CCC (E)	CC (T) C	CVSR (T) S	GRWR (E)	NC (T)	CC (T)	SCCC (T)	SC (E)	CCV (T)	(T)	Green Sturgeon (T)	SONCC	ссс	CC CVSR	SRWR	NC CCC SCCC SC CCV	Eulachon	Green Sturgeon
Orange 33	117-G7									х										

Species List - Intersection of USGS Topographic Quadrangle Map for Orange with NOAA Fisheries ESA Listed Species, Critical Habitat, Essential Fish Habitat, and MMPA Species Data

November 2016

X = Present on the Quadrangle		ESA N INVERT	ESA MARINE NVERTEBRATES HABITAT		ESA SEA TURTLES			ESA WHALES	ESA PINNIPEDS	ESA PINNIPEDS CRITICAL HABITAT	ESSENTIAL FISH HABITAT			АТ	MMPA SPECIES		
Quad Name	Quad Number	Black Abalone (E)	White Abalone (E)	Black Abalone	East Pacific Green Sea Turtle (T)	Olive Ridley Sea Turtle (T/E)	Leatherback Sea Turtle (E)	North Pacific Loggerhead Sea Turtle (E)	Whales (see list below)	Guadalupe Fur Seal (T)	Steller Sea Lion	SALMON Coho Chinool	Groundfish	Coastal Pelagic	Highly Migratory Species	MMPA Cetaceans (see "MMPA Species" tab for list)	MMPA Pinnipeds (see "MMPA Species" tab for list)
Orange	33117-G7																

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) **APPENDIX D – Sensitive Plant Species Potential to Occur** 

### APPENDIX D – SPECIAL STATUS PLANT SPECIES - POTENTIAL TO OCCUR (PTO) PETERS CANYON BIKEWAY EXTENSION PROJECT

Scientific Name	Common Name	Flowering Period	CRPR	State	Fed	NCCP /HCP	Preferred Habitat	Potential For Occurrence	
Angiosperms (Dicotyledons)									
Abronia maritima	red sand-verbena	Feb-Nov	4.2	None	None		Coastal dunes	None. No suitable habitat present.	
Abronia villosa var. aurita	chaparral sand- verbena	(Jan) Mar- Sep	1B.1	None	None		Chaparral, coastal scrub, desert dunes, sandy	<b>Not Expected.</b> Species not observed. Historic disturbance in BSA minimizes PTO. Inland OC records typically over 50yrs old.	
Aphanisma blitoides	aphanisma	Feb-Jun	1B.2	None	None		Coastal bluff scrub, coastal dunes, coastal scrub sandy or gravelly	<b>None.</b> Suitable habitat is not present.	
Astragalus brauntonii	Braunton's milk- vetch	Jan-Aug	1B.1	None	FE		Chaparral, coastal scrub, valley & foothill grassland, recent burned/disturbed areas, usually sandstone w/carbonate layers	<b>Not Expected</b> . Species not observed during survey. One record near Irvine Lake. Other records in OC from Santa Ana Mountains. Soils not present.	
Astragalus hornii var. hornii	Horn's milk-vetch	May-Oct	1B.1	None	None		Meadows and seeps, playas. Lake margins, alkaline sites. 75-350 m.	None. No suitable habitat present.	
Atriplex coulteri	Coulter's saltbush	Mar-Oct	1B.2	None	None		Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland alkaline or clay	<b>Not Expected.</b> Species not observed during survey. Historic disturbance in BSA limits PTO. Few inland OC records - none nearby.	
Atriplex pacifica	South Coast saltscale	Mar-Oct	1B.2	None	None		Coastal bluff scrub, coastal dunes, coastal scrub, playas	<b>None.</b> Suitable habitat is not present.	
Atriplex parishii	Parish's brittlescale	Jun-Oct	1B.1	None	None		Chenopod scrub, playas, vernal pools alkaline	None. Suitable habitat is not present.	
Atriplex serenana var. davidsonii	Davidson's saltscale	Apr-Oct	1B.2	None	None		Coastal bluff scrub, coastal scrub alkaline	None. Suitable habitat is not present.	
Baccharis malibuensis	Malibu baccharis	Aug	1B.1	None	None		Chaparral, cismontane woodland, coastal scrub, riparian woodland	Not Expected. Species not observed during survey. Similar to <i>Astragalus</i> <i>brauntonii</i> , just one record near Irvine Lake - all other records in OC from Santa Ana Mountains.	
Calandrinia breweri	Brewer's calandrinia	(Jan) Mar- Jun	4.2	None	None		Chaparral, coastal scrub sandy or loamy, disturbed sites and burns	<b>Not Expected.</b> Species not observed. Historic disturbance in BSA limits PTO. Inland OC records limited to Santa Ana Mountains.	

Scientific Name	Common Name	Flowering Period	CRPR	State	Fed	NCCP /HCP	Preferred Habitat	Potential For Occurrence
Calystegia felix	lucky morning- glory	Mar-Sep	1B.1	None	None		Meadows and seeps (sometimes alkaline), riparian scrub (alluvial) historically associated with wetland and marshy places, but possibly in drier situations as well. Possibly silty loam and alkaline	None. Suitable habitat is not present.
Camissoniopsis lewisii	Lewis' evening- primrose	Mar-May (Jun)	3	None	None		Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland sandy or clay	None. Suitable habitat is not present.
Centromadia parryi ssp. australis	southern tarplant	May-Nov	1B.1	None	None		Marshes and swamps (margins), valley and foothill grassland (vernally mesic), vernal pools	None. Suitable habitat is not present.
Centromadia pungens ssp. laevis	smooth tarplant	Apr-Sep	1B.1	None	None		Chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland alkaline	None. Suitable habitat is not present.
Cercocarpus minutiflorus	small-flowered mountain mahogany	Mar-May	N/A	None	None	Y	Chaparral	<b>None.</b> Suitable habitat is not present.
Chloropyron maritimum ssp. maritimum	salt marsh bird's- beak	May-Oct (Nov)	1B.2	CE	FE		Coastal dunes, marshes and swamps (coastal salt)	None. Suitable habitat is not present.
Chorizanthe parryi var. fernandina	San Fernando Valley spineflower	Apr-Jul	1B.1	CE	FC		Coastal scrub (sandy), valley and foothill grassland	<b>Absent.</b> Species presumed extirpated in OC. Last recorded 1902.
Chorizanthe polygonoides var. longispina	long spined spineflower	Apr-Jul	1B.2	None	None		Chaparral, coastal scrub, meadows and seeps, Valley and foothill grassland, Vernal pools often clay	Absent. Species known only from old record in Santa Ana Mountains.
Convolvulus simulans	small-flowered morning-glory	Mar-Jul	4.2	None	None		Chaparral (openings), coastal scrub, valley and foothill grassland clay, serpentinite seeps	<b>None.</b> No seep habitat present. Species not observed.
Deinandra paniculata	paniculate tarplant	(Mar) Apr- Nov (Dec)	4.2	None	None		Coastal scrub, valley and foothill grassland, vernal pools usually vernally mesic, sometimes sandy	<b>Not Expected.</b> Species not observed. Historic disturbance in BSA limits PTO.
Dodecahema leptoceras	slender-horned spineflower	Apr-Jun	1B.1	CE	FE		Chaparral, cismontane woodland, coastal scrub (alluvial fan) sandy	None. Suitable habitat is not present.
Dudleya cymosa ssp. ovatifolia	Santa Monica Mountains dudleya	May-Jun	1B.1	None	FT	Y	In canyons on volcanic or sedimentary substrates; primarily on north-facing slopes. 150-335 m.	None. Suitable habitat is not present.
Dudleya multicaulis	many-stemmed dudleya	Apr-Jul	1B.2	None	None		Chaparral, coastal scrub, valley and foothill grassland often clay	<b>Not Expected.</b> Species not observed. Historic disturbance in BSA limits PTO.

Scientific Name	Common Name	Flowering Period	CRPR	State	Fed	NCCP /HCP	Preferred Habitat	Potential For Occurrence
Dudleya stolonifera	Laguna Beach dudleya	May-Jul	1B.1	СТ	FT	Y	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland rocky	<b>Absent.</b> Species not observed. Historic disturbance in BSA limits PTO. No records in local area – all reports in OC from areas much nearer the coast (SW of SR-73).
Eriastrum densifolium ssp. sanctorum	Santa Ana River woollystar	Apr-Sep	1B.1	CE	FE		Chaparral, coastal scrub (alluvial fan) sandy or gravelly	<b>None.</b> Suitable habitat is not present.
Eryngium aristulatum var. parishii	San Diego button- celery	Apr-Jun	1B.1	CE	FE		Coastal scrub, valley and foothill grassland, vernal pools mesic	None. Suitable habitat is not present.
Harpagonella palmeri	Palmer's grapplinghook	Mar-May	4.2	None	None		Chaparral, coastal scrub, valley and foothill grassland clay; open grassy areas within shrubland	<b>Absent</b> . Species not observed during survey. Historic disturbance in BSA limits PTO. No records in local area.
Helianthus nuttallii ssp. parishii	Los Angeles sunflower	Aug-Oct	1A	None	None		Marshes and swamps (coastal salt and freshwater)	<b>Absent.</b> Species presumed extirpated in OC. Last recorded 1933 near Upper Newport Bay.
Horkelia cuneata var. puberula	mesa horkelia	Feb-Jul (Sep)	1B.1	None	None		Chaparral (maritime), cismontane woodland, coastal scrub sandy or gravelly	<b>Absent</b> . Species not observed during survey. Historic disturbance in BSA limits PTO. No records in local area.
Isocoma menziesii var. decumbens	decumbent goldenbush	Apr-Nov	1B.2	None	None		Coastal scrub, chaparral. Sandy soils; often in disturbed sites. 1-915 m.	<b>Absent</b> . Species not observed during survey. Historic disturbance in BSA limits PTO. No records in local area.
Juglans californica	Southern California black walnut	Mar-Aug	4.2	None	None		Chaparral, cismontane woodland, coastal scrub, riparian woodland alluvial	Absent. Conspicuous perennial tree species not observed in BSA during survey.
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	Feb-Jun	1B.1	None	None		Marshes and swamps (coastal salt), playas, vernal pools	<b>Absent</b> . Species not observed during survey. Historic disturbance in BSA limits PTO. No suitable habitat present.
Lepechinia cardiophylla	heart-leaved pitcher sage	Apr-Jul	1B.2	None	None	Y	Closed-cone coniferous forest, chaparral, cismontane woodland	None. Suitable habitat is not present.
Lepidium virginicum var. robinsonii	Robinson's pepper- grass	Jan-Jul	4.3	None	None		Chaparral, coastal scrub	<b>Not Expected</b> . Species not observed. Historic disturbance in BSA limits PTO. Inland OC records limited to Santa Ana Mountains.
Monardella australis ssp. jokerstii	Jokerst's monardella	Jul-Sep	1B.1	None	None		Chaparral, lower montane coniferous forest steep scree or talus slopes between breccia, secondary alluvial benches along drainages and washes.	None. Suitable habitat is not present.

Scientific Name	Common Name	Flowering Period	CRPR	State	Fed	NCCP Preferred Habitat	Potential For Occurrence
Monardella hypoleuca ssp. intermedia	intermediate monardella	Apr-Sep	1B.3	None	None	Chaparral, cismontane woodland, lower montane coniferous forest (sometimes) usually understory	None. Suitable habitat is not present.
Nama stenocarpa	mud nama	Jan-Jul	2B.2	None	None	Marshes and swamps (lake margins, riverbanks)	None. Suitable habitat is not present.
Nasturtium gambelii	Gambel's water cress	Apr-Oct	1B.1	ST	FE	Marshes and swamps (freshwater or brackish)	None. Suitable habitat is not present.
Navarretia prostrata	prostrate vernal pool navarretia	Apr-Jul	1B.1	None	None	Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools Mesic	<b>None.</b> Suitable habitat is not present. (Requires vernal pools)
Nemacaulis denudata var. denudata	coast woolly-heads	Apr-Sep	1B.2	None	None	Coastal dunes	None. Suitable habitat is not present.
Penstemon californicus	California beardtongue	May-Jun (Aug)	1B.2	None	None	Chaparral, lower montane coniferous forest, pinyon and juniper woodland sandy	None. Suitable habitat is not present.
Pentachaeta aurea ssp. allenii	Allen's pentachaeta	Mar-Jun	1B.1	None	None	Coastal scrub (openings), valley and foothill grassland	<b>Absent.</b> Species not observed during survey. Historic disturbance in BSA limits PTO. No records in local area.
Phacelia hubbyi	Hubby's phacelia	Apr-Jul	4.2	None	None	Chaparral, coastal scrub, valley and foothill grassland gravelly, rocky, talus	<b>Moderate.</b> Species was not observed during survey. Reported in Peters Canyon Wilderness Park in willow grove near north end of the park but presumed destroyed by Canyon 2 Fire. Could occur in BSA but <b>Not Expected</b> to occur in areas affected by project.
Phacelia ramosissima var. austrolitoralis	south coast branching phacelia	Mar-Aug	3.2	None	None	Chaparral, coastal dunes, coastal scrub, marshes and swamps (coastal salt) sandy, sometimes rocky	<b>Absent.</b> Species not observed during survey. Historic disturbance in BSA limits PTO. No records in local area.
Pickeringia montana var. tomentosa	woolly chaparral- pea	May-Aug	4.3	None	None	Chaparral gabbroic, granitic, clay	None. Suitable habitat is not present.
Polygala cornuta var. fishiae	Fish's milkwort	May-Aug	4.3	None	None	Chaparral, cismontane woodland, riparian woodland	None. No suitable habitat present.
Pseudognaphalium leucocephalum	white rabbit- tobacco	(Jul) Aug- Nov (Dec)	2B.2	None	None	Chaparral, cismontane woodland, coastal scrub, riparian woodland sandy, gravelly	<b>Absent.</b> Species not observed during survey. Historic disturbance in BSA limits PTO. No records in local area.
Quercus dumosa	Nuttall's scrub oak	Mar-May	1B.1	None	None	Y Generally sandy soils near coast, sandstone, chaparral, coastal-sage scrub	<b>None.</b> No suitable habitat present. Outside known range in region (i.e., only occurs in maritime chaparral near coast.).

Scientific Name	Common Name	Flowering Period	CRPR	State	Fed	NCCP /HCP	Preferred Habitat	Potential For Occurrence		
Quercus engelmannii	Engelmann oak	Mar-Jun	4.2	None	None		Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland	Absent. Large perennial tree species not observed in BSA during survey.		
Romneya coulteri	Coulter's matilija poppy	Mar-Jul (Aug)	4.2	None	None	Y	Chaparral, coastal scrub often in burns	Absent. Conspicuous perennial shrub not observed in BSA during survey.		
Senecio aphanactis	chaparral ragwort	Jan-Apr (May)	2B.2	None	None		Chaparral, cismontane woodland, coastal scrub sometimes alkaline	<b>Absent</b> . Species not observed during survey. Historic disturbance in BSA limits PTO. No records in local area.		
Sidalcea neomexicana	salt spring checkerbloom	Mar-Jun	2B.2	None	None		Chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, playas alkaline, mesic	None. Suitable habitat is not present.		
Suaeda esteroa	estuary seablite	(May) Jul- Oct (Jan)	1B.2	None	None		Marshes and swamps (coastal salt)	None. Suitable habitat is not present.		
Symphyotrichum defoliatum	San Bernardino aster	Jul- Nov(Dec)	1B.2	None	None		Freshwater marsh, meadows and seeps, marshes and swamps, valley and foothill grassland (vernally mesic) near ditches, streams, springs	None. Suitable habitat is not present.		
Verbesina dissita	big-leaved crownbeard	May-Aug	1B.1	ST	FT		Shrubby coastal slopes and steep, rocky, primarily north- facing slopes within 1.5 miles of the ocean, in gravelly soils. 150-245 m.	<b>None.</b> No suitable habitat present. Outside known range in region (i.e., only occurs in maritime chaparral near coast).		
Angiosperms (Monocotyledons)										
Brodiaea filifolia	thread-leaved brodiaea	Mar-Jun	1B.1	SE	FT		Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools often clay	<b>Absent</b> . Species not observed during survey. Historic disturbance in BSA limits PTO. Nearest record: Whiting Ranch Wilderness Park >5mi distant.		
Calochortus catalinae	Catalina mariposa lily	(Feb) Mar- Jun	4.2	None	None	Y	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland	<b>Moderate.</b> Species was not observed during survey and historic disturbance limits PTO but this species could occur in the BSA.		
Calochortus plummerae	Plummer's mariposa lily	May-Jul	4.2	None	None		Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland granitic, rocky	<b>Not Expected.</b> Species not observed. Historic disturbance in BSA limits PTO. Inland OC records limited to Santa Ana Mountains.		
Calochortus weedii var. intermedius	intermediate mariposa lily	May-Jul	1B.2	None	None	Y	Chaparral, coastal scrub, valley and foothill grassland rocky, calcareous	<b>Moderate.</b> Species was not observed during survey and historic disturbance limits PTO but this species could occur in the BSA. Nearest reported occurrence near Rattlesnake Reservoir (,5 mi distant). <b>Not expected</b> in areas affected by project.		

\_

Scientific Name	Common Name	Flowering Period	CRPR	State	Fed	NCCP /HCP	Preferred Habitat	Potential For Occurrence	
Hordeum intercedens	vernal barley	Mar-Jun	3.2	None	None		Coastal dunes, coastal scrub, valley and foothill grassland (saline flats and depressions), vernal pools	None. Suitable habitat is not present.	
Juncus acutus ssp. leopoldii	southwestern spiny rush	(Mar) May- Jun	4.2	None	None		Coastal dunes (mesic), meadows and seeps (alkaline seeps), marshes and swamps (coastal salt)	None. Suitable habitat is not present.	
Lilium humboldtii ssp. ocellatum	ocellated Humboldt lily	Mar-Jul (Aug)	4.2	None	None		Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland openings	<b>Not Expected.</b> Species not observed. Historic disturbance in BSA limits PTO. Inland OC records limited to Santa Ana Mountains.	
Nolina cismontana	chaparral nolina	(Mar) May- Jul	1B.2	None	None		Chaparral, coastal scrub sandstone or gabbro	Absent. Conspicuous perennial succulent not observed in BSA during survey.	
Orcuttia californica	California Orcutt grass	Apr-Aug	1B.1	SE	FE		Vernal pools	None. Suitable habitat is not present.	
Sagittaria sanfordii	Sanford's arrowhead	May-Oct (Nov)	1B.2	None	None		Marshes and swamps	None. Suitable habitat is not present.	
Gymnosperms									
Hesperocyparis forbesii	Tecate cypress	N/A	1B.1	None	None	Y	Closed-cone coniferous forest, chaparral clay, gabbroic or meta-volcanic soils	None. Suitable habitat is not present.	
Key to Species Listing Status Codes									
FE     Federally Endangered     SE       FT     Federally Threatened     ST       NCCP / HCP			State Listed as Endangered State Listed as Threatened NCCP/HCP "Identified Species", covered under the NCCP/HCP terms						
California Rare Plant Rank (CRPR)									
<ul> <li>Rank 1A: Presumed extirpated in California and either Rare or Extinct elsewhere.</li> <li>Rank 1B: Rare, threatened, or endangered in California and elsewhere.</li> <li>Rank 2A: Presumed extirpated in California, but common elsewhere.</li> <li>Rank 2B: Rare, threatened, or endangered in California, but more common elsewhere.</li> <li>Rank 3: Plant about which more information is needed.</li> <li>Rank 4: Species of limited distribution in California.</li> </ul>				e.	<ul> <li><u>Threat Code extensions and their meanings:</u></li> <li>Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)</li> <li>Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)</li> <li>Not very threatened in California (&lt;20% of occurrences threatened / low degree and immediacy of threat or no current threats known)</li> </ul>				
**APPENDIX E – Sensitive Wildlife Species Potential to Occur** 

#### APPENDIX E – SPECIAL STATUS WILDLIFE SPECIES - POTENTIAL TO OCCUR (PTO) PETERS CANYON BIKEWAY EXTENSION PROJECT

		Special Status Designations				
Scientific Name	Common Name	Federal	State	NCCP/HCP or Other	Preferred Habitat	Potential For Occurrence
Arthropods, Subphylu	m Crustaceans, Order Ano	ostraca	-	-		
Branchinecta sandiegonensis	San Diego fairy shrimp	FE		NCCP/HCP Covered, IUCN: Endangered	Endemic to San Diego and Orange County mesas. Vernal pools.	None.
Streptocephalus woottoni	Riverside fairy shrimp	FE		NCCP/HCP Covered, IUCN: Endangered	Endemic to Western Riverside, Orange, and San Diego counties in areas of tectonic swales/earth slump basins in grassland and coastal sage scrub. Inhabit seasonally astatic pools filled by winter/spring rains. Hatch in warm water later in the season.	None.
Arthropods, Subphylu	m Hexapods, Class Insects	5,				
Euphydryas editha quino	Quino checkerspot butterfly	FE		NCCP/HCP Covered	Sunny openings within chaparral & coastal sage shrublands in parts of Riverside & San Diego counties. Hills and mesas near the coast. Need high densities of food plants <i>Plantago erecta</i> , <i>P. insularis</i> , and <i>Orthocarpus purpurescens</i> .	<b>None</b> . Food plants not present within BSA. Species not observed in OC recently.
Fish						
Catostomus santaanae	Santa Ana sucker	FT		AFS: Threatened IUCN: Vulnerable	Endemic to Los Angeles Basin south coastal streams. Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water, and algae.	<b>None</b> . No active streambeds or flowing water in the study area.
Oncorhynchus mykiss irideus pop. 10	steelhead - southern California DPS	FE		AFS: Endangered	Federal listing refers to populations from Santa Maria River south to southern extent of range (San Mateo Creek in San Diego County). Southern steelhead likely have greater physiological tolerances to warmer water and more variable conditions.	None.
Rhinichthys osculus ssp. 3	Santa Ana speckled dace		SSC	AFS: Threatened	Headwaters of the Santa Ana and San Gabriel rivers. May be extirpated from the Los Angeles River system. Requires permanent flowing streams with summer water temps of 17-20 C. Usually inhabits shallow cobble and gravel riffles.	None.
Amphibians						
Anaxyrus californicus	arroyo toad	FE	SSC	NCCP/HCP Covered IUCN: Endangered	Semi-arid regions near washes or intermittent streams, including valley-foothill and desert riparian, desert wash, etc. Rivers with sandy banks, willows, cottonwoods, and sycamores; loose, gravelly areas of streams in drier parts of range.	Not Expected. This species is not reported to occur in the local area, but occurs in the major stream systems in the Santa Ana Mountains.

		Special Status Designations				
Scientific Name	Common Name	Federal	State	NCCP/HCP or Other	Preferred Habitat	Potential For Occurrence
Spea hammondii	western spadefoot		SSC	NCCP/HCP Covered (Coastal Subarea only) IUCN: Near Threatened	Occurs primarily in grassland habitats, but can be found in valley- foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	Not Expected. This species could occur in Peters Canyon Regional Park but is not expected to occur in the immediate project area due to lack of suitable habitat.
Taricha torosa	Coast Range newt	n SSC			Coastal drainages from Mendocino County to San Diego County. Lives in terrestrial habitats & will migrate over 1 km to breed in ponds, reservoirs & slow moving streams.	<b>Not Expected</b> . This species could occur in Peters Canyon Regional Park but is not expected to occur in the immediate project area due to lack of suitable habitat.
Reptiles						
Anniella stebbinsi	Southern California legless lizard		SSC		Generally, south of the Transverse Range, extending to northwestern Baja California. Occurs in sandy or loose loamy soils under sparse vegetation. Disjunct populations in the Tehachapi and Piute Mountains in Kern County. Variety of habitats; generally, in moist, loose soil. They prefer soils with a high moisture content.	Not Expected. This species could occur in Peters Canyon Regional Park but is not expected to occur in the immediate project area due to lack of suitable habitat.
Arizona elegans occidentalis	California glossy snake		SSC		Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California. Generalist reported from scrub and grassland habitats, often with loose or sandy soils.	<b>Potential</b> . Species was not observed or detected at the time of survey.
Aspidoscelis hyperythra	orange-throated whiptail			NCCP/HCP Covered IUCN: Least Concern	Inhabits low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats. Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants necessary for its major food: termites.	<b>Potential</b> . Species was not observed or detected at the time of survey but suitable habitat is present.
Aspidoscelis tigris stejnegeri	coastal whiptail		SSC	NCCP/HCP Covered	Found in deserts and semi-arid areas with sparse vegetation and open areas. Also found in woodland & riparian areas. Ground may be firm soil, sandy, or rocky.	<b>Potential</b> . Species was not observed or detected at the time of survey but suitable habitat is present.
Crotalus ruber	red-diamond rattlesnake		SSC	NCCP/HCP Covered	Chaparral, woodland, grassland, & desert areas from coastal San Diego County to the eastern slopes of the mountains. Occurs in rocky areas and dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	<b>Potential</b> . This species has been observed in Peters Canyon Regional Park and has some potential to occur in the BSA.
Emys marmorata	western pond turtle		SSC	IUCN: Vulnerable	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft. elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	Not Expected. This species is known to occur in Peters Canyon Regional Park but is not expected to occur in the immediate project area due to lack of suitable habitat.

		Special Status Designations		Designations		
Scientific Name	Common Name	Federal	State	NCCP/HCP or Other	Preferred Habitat	Potential For Occurrence
Phrynosoma blainvillii	coast horned lizard		SSC	NCCP/HCP Covered IUCN: Least Concern	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	<b>Potential</b> . Species was not observed or detected at the time of survey. Habitat is marginally suitable.
Salvadora hexalepis virgultea	coast patch-nosed snake		SSC		Brushy or shrubby vegetation in coastal Southern California. Require small mammal burrows for refuge and overwintering sites.	<b>Potential</b> . Species was not observed or detected at the time of survey.
Thamnophis hammondii two-striped gartersnake			SSC	IUCN: Least Concern	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 7,000 ft. elevation. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	Not Expected. This species could occur in Peters Canyon Regional Park but is not expected to occur in the immediate project area due to lack of suitable habitat.
Birds						
Accipiter cooperii	Cooper's hawk			IUCN: Least Concern	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	<b>Potential</b> . Species was not observed or detected at the time of survey but is known to occur nearby in woodlands in Peters Canyon Regional Park.
Agelaius tricolor	tricolored blackbird		ST; SSC	IUCN: Endangered NABCI: Red Watch List USFWS - BCC	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	None.
Aimophila ruficeps canescens	southern California rufous-crowned sparrow			NCCP/HCP Covered	Resident in Southern California coastal sage scrub and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass and forb patches.	<b>Potential</b> . Species was not observed or detected at the time of survey but marginally suitable habitat is present.
Ammodramus savannarum	grasshopper sparrow		SSC	IUCN: Least Concern	Dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting.	<b>Not Expected.</b> This species could occur in Peters Canyon Regional Park but is not expected to occur in the immediate project area due to lack of suitable habitat.
Aquila chrysaetos	golden eagle		SFP	NCCP/HCP Covered IUCN: Least Concern   USFWS – BCC	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff- walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	Potential to Forage. No local nesting known.

		S	pecial Status	Designations		
Scientific Name	Common Name	Federal	State	NCCP/HCP or Other	Preferred Habitat	Potential For Occurrence
Ardea herodias	great blue heron (nesting colony)			IUCN: Least Concern	Colonial nester in tall trees, cliffsides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	Not Expected. Nesting colony of this species was not observed or detected during surveys although potentially suitable habitat occurs in Peters Canyon Park, but not in the project area.
Asio otus	long-eared owl		SSC	IUCN: Least Concern	Riparian bottomlands grown to tall willows and cottonwoods; also, belts of live oak paralleling stream courses. Require adjacent open land, productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.	<b>Not Expected.</b> Suitable habitat is lacking in the BSA but occurs in Peters Canyon Regional Park
Athene cunicularia	burrowing owl		SSC	IUCN: Least Concern USFWS – BCC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Not Expected. Habitat in the area is poorly suited to this species due to relative dense scrub cover. Species was not detected during survey.
Buteo swainsoni	Swainson's hawk		ST	IUCN: Least Concern USFWS – BCC	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Potential to Forage during Migration Only. During migration this species may pass through the area but does not nest south of Tehachapi Range in northern L.A County.
Campylorhynchus brunneicapillus sandiegensis	coastal cactus wren		SSC	NCCP/HCP Covered USFWS – BCC	Southern California coastal sage scrub. Wrens require tall <i>Opuntia</i> cactus for nesting and roosting.	Low Potential. Species was not observed or detected in the BSA at the time of survey. No suitable habitat in project area. Known to reside in Peters Canyon Regional Park
Charadrius alexandrinus nivosus	western snowy plover	FT	SSC	NABCI: Red Watch List USFWS – BCC	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	None. No suitable habitat.
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FT	SE	NABCI: Red Watch List USFWS – BCC	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	<b>None</b> . Species apparently absent from OC for decades.
Coturnicops noveboracensis	yellow rail		SSC	IUCN: Least Concern NABCI: Red Watch List USFWS – BCC	Summer resident in eastern Sierra Nevada in Mono County. Freshwater marshlands.	None.

		Special Status Designations		Designations		
Scientific Name	Common Name	Federal	State	NCCP/HCP or Other	Preferred Habitat	Potential For Occurrence
Elanus leucurus	white-tailed kite		SFP	IUCN: Least Concern	Rolling foothills and valley margins with scattered oaks & river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Potential to Forage. Species was not observed or detected at the time of survey but may forage in the BSA. Reported present within Peter's Canyon Regional Park.
Empidonax traillii extimus	southwestern willow flycatcher	FE	SE	NCCP/HCP Covered NABCI: Red Watch List	Riparian woodlands in Southern California.	<b>Not Expected.</b> This species is very unlikely to occur in areas without extensive riparian woodland habitat.
Eremophila alpestris actia	California horned lark			NCCP/HCP Covered IUCN: Least Concern	Coastal regions, chiefly from Sonoma County to San Diego County. Also main part of San Joaquin Valley and east to foothills. Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	<b>None</b> . Suitable open areas and grassland habitat is not present in the BSA.
Falco peregrinus anatum	American peregrine falcon	Delisted	Delisted; SFP	NCCP/HCP Covered USFWS – BCC	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	Potential to Forage. No local nesting known.
Haliaeetus leucocephalus	bald eagle	Delisted	SE; SFP	IUCN: Least Concern USFWS – BCC	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	<b>Potential to Forage</b> . But rarely in BSA. Known to nest within 10 miles.
lcteria virens	yellow-breasted chat		SSC	IUCN: Least Concern	Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 ft. of ground.	<b>Observed.</b> Species audibly detected in southern willow scrub in Peters Canyon Regional Park just west of BSA.
Laterallus jamaicensis coturniculus	California black rail		ST; SFP	IUCN: Near Threatened NABCI: Red Watch List USFWS - BCC	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	<b>Not Expected</b> . No suitable habitat in the BSA or nearby.
Pandion haliaetus	osprey			IUCN: Least Concern	Ocean shore, bays, freshwater lakes, and larger streams. Large nests built in tree-tops within 15 miles of a good fish-producing body of water.	Potential to Forage. But rarely, as this species not expected away from coast except around large water bodies.
Passerculus sandwichensis beldingi	Belding's savannah sparrow		SE		Inhabits coastal salt marshes, from Santa Barbara south through San Diego County. Nests in Salicornia on and about margins of tidal flats.	None.

		Special Status Designations				
Scientific Name	Common Name	Federal	State	NCCP/HCP or Other	Preferred Habitat	Potential For Occurrence
Polioptila californica californica	coastal California gnatcatcher	FT	SSC	NCCP/HCP Covered NABCI: Yellow Watch List	Obligate, permanent resident of coastal sage scrub below 2500 ft. in Southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	<b>Observed.</b> Species was audibly detected and observed in CSS habitat in the BSA and is known to nest in Peters Canyon Regional Park.
Rallus obsoletus levipes	light-footed Ridgway's rail	FE	FE; SFP	NABCI: Red Watch List	Found in salt marshes traversed by tidal sloughs, where cordgrass and pickleweed are the dominant vegetation. Requires dense growth of either pickleweed or cordgrass for nesting or escape cover; feeds on mollusks and crustaceans.	<b>None</b> . No suitable habitat and too far inland from coastal salt marsh areas.
Riparia riparia	bank swallow		ST	IUCN: Least Concern	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine- textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	<b>Not Expected</b> . Suitable habitat is lacking in the BSA
Setophaga petechia	yellow warbler		SSC	USFWS - BCC	Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	<b>Potential</b> . Species was not observed or detected at the time of survey. Observed recently in Peter's Canyon Regional Park.
Sternula antillarum browni	California least tern	FE	SFP	NABCI: Red Watch List	Nests along the coast from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, land-fills, or paved areas.	<b>None</b> . Suitable habitat is not present
Vireo bellii pusillus	least Bell's vireo	FE	SE	NCCP/HCP Conditionally Covered IUCN: Near Threatened NABCI: Yellow Watch List	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	<b>Observed.</b> Species was audibly detected within southern willow scrub associated with Peters Canyon Regional Park to the west of BSA.
Mammals						
Antrozous pallidus	pallid bat		SSC	IUCN: Least Concern WBWG: High Priority	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	Potential to Forage. Woodland and scrub habitat areas in and near the BSA may offer forage opportunity but no roosting habitat occurs in the BSA or nearby.
Chaetodipus fallax fallax	northwestern San Diego pocket mouse		SSC		Coastal scrub, chaparral, grasslands, sagebrush, etc. in western San Diego County. Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	Not Expected. The available habitat in the BSA is not well suited (not very rocky or gravelly) and the BSA appears to lie outside the general range of this subspecies.

		Special Status Designations				
Scientific Name	Common Name	Federal	State	NCCP/HCP or Other	Preferred Habitat	Potential For Occurrence
Choeronycteris mexicana	Mexican long-tongued bat		SSC	IUCN: Near Threatened WBWG: High Priority	Occasionally found in San Diego County, which is on the periphery of their range. Feeds on nectar and pollen of night-blooming succulents. Roosts in relatively well-lit caves, and in and around buildings.	Potential to Forage. Woodland and scrub habitat areas in and near the BSA may offer forage opportunity but no roosting habitat (i.e., caves, buildings) occurs in the BSA or nearby.
Eumops perotis californicus	western mastiff bat		SSC	WBWG: High Priority Many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.		<b>Potential.</b> Foraging habitat is present in the BSA. Trees in the area may offer roosting sites.
Lasiurus cinereus hoary bat				IUCN: Least Concern WBWG: Medium Priority	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	<b>Potential to Forage</b> . Unlikely to roost due to the lack of large trees in the BSA, this relatively common and widespread migratory species may forage in the local area.
Myotis yumanensis	Yuma myotis			IUCN: Least Concern WBWG: Low-Medium Priority	Optimal habitats are open forests and woodlands with sources of water over which to feed. Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.	Potential to Forage. Woodland areas and water sources in and near the BSA could offer forage opportunity but no roosting habitat occurs in the BSA or nearby.
Neotoma lepida intermedia	San Diego desert woodrat		SSC	NCCP/HCP Covered	Coastal scrub of Southern California from San Diego County to San Luis Obispo County. Moderate to dense canopies preferred. They are particularly abundant in rock outcrops, rocky cliffs, and slopes.	Potential. This species could occur in Peters Canyon Regional Park and in the BSA but no woodrat middens observed during survey.
Nyctinomops femorosaccus	pocketed free-tailed bat		SSC	IUCN: Least Concern WBWG: Medium Priority	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Rocky areas with high cliffs.	<b>None</b> . Suitable habitat is not present.
Nyctinomops macrotis	big free-tailed bat		SSC	IUCN: Least Concern WBWG: Medium-High Priority	Low-lying arid areas in Southern California. Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	<b>None</b> . Suitable habitat is not present.
Onychomys torridus ramona	southern grasshopper mouse		SSC		Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover. Feeds almost exclusively on arthropods, especially scorpions and orthopteran insects.	Not Expected. Although marginally suitable habitat may be present, this species is closely identified with desert areas and its range may not extend to Inland Orange County.

			Special Status Designations		Designations		
Scient	ific Name	Common Name	Federal	State	NCCP/HCP or Other	Preferred Habitat	Potential For Occurrence
Perognath Iongimemi	erognathus ngimembris pacificus Pacific pocket mouse FE SSC NCCP/HCP Covered		Inhabits the narrow coastal plains from the Mexican border north to El Segundo, Los Angeles County. Seems to prefer soils of fine alluvial sands near the ocean, but much remains to be learned.	<b>None</b> . Suitable habitat is not present. BSA is beyond known geographic range (too far inland).			
Sorex orna salicornicu	atus ıs	southern California saltmarsh shrew		SSC		Coastal marshes in Los Angeles, Orange and Ventura counties. Requires dense vegetation and woody debris for cover.	<b>None</b> . No suitable habitat and too far inland from coastal salt marsh areas.
Taxidea taxus		American badger		SSC	IUCN: Least Concern	Open shrub, forest, and herbaceous habitats, with friable soils.	Not Expected. Although recently confirmed within southern Orange County, there are no records of this secretive large mammal in the local area. No potential burrow sites or suitable soils noted in BSA.
Key to Spec	cies Listing Status	Codes					
FE Federally Endangered USFWS United States Fish & W.   FT Federally Inreatened CDFW California Department of CDFW   SE State Endangered IUCN International Union for C   ST State Threatened WBWG Western Bat Working G   SFP State Fully Protected Species AFS American Fisheries Soc   SSC State Species of Special Concern NABCI North American Bird Co   NCCP/HCP NCCP/HCP Identified S		ildlife Service f Fish & Wildlife Conservation of Nature roup siety Inservation Initiative species (Covered under NCCP/HCP)					

### APPENDIX F – Floral and Faunal Compendia

### APPENDIX F – PETERS CANYON BIKEWAY EXTENSION PROJECT

## Floral Compendium

Family	Scientific Name	Common Name
Adoxaceae		Muskroot Family
	Sambucus nigra subsp. caerulea	blue elderberry
Agavaceae		Century Plant Family
	Hesperoyucca whipplei	chaparral yucca
Amaranthaceae		Amaranth Family
*	Amaranthus albus	tumbleweed
Anacardiaceae		Sumac or Cashew Family
	Malosma laurina	laurel sumac
	Rhus integrifolia	lemonade berry
*	Schinus molle	Peruvian pepper tree
*	Schinus terebinthifolius	Brazilian pepper tree
	Toxicodendron diversilobum	western poison oak
Apiaceae		Carrot Family
*	Conium maculatum	poison hemlock
Asteraceae		Sunflower Family
	Artemisia californica	California sagebrush
	Artemisia douglasiana	mugwort
	Baccharis pilularis	coyote brush
	Baccharis salicifolia	mule fat
*	Centaurea melitensis	tocalote
*	Cirsium vulgare	bull thistle
	Encelia californica	bush sunflower
	Erigeron canadensis	horseweed
	Helianthus annuus	hairy leaved sunflower
*	Helminthotheca echioides	bristly ox-tongue
	Isocoma menziesii	coastal goldenbush
*	Lactuca serriola	prickly lettuce
*	Silybum marianum	milk thistle
*	Sonchus asper subsp. asper	prickly sow thistle
	Stephanomeria diegensis	San Diego milk aster
	Xanthium strumarium	cocklebur
Boraginaceae		Borage or Waterleaf Family
	Heliotropium curassavicum	salt heliotrope
	Phacelia ramosissima	branching phacelia

Brassicaceae			Mustard Family
	*	Brassica nigra	black mustard
	*	Hirschfeldia incana	shortpod mustard
Cactaceae			Cactus Family
euoluoouo	*	Opuntia ficus-indica	mission prickly-pear
		Opuntia littoralis	coast prickly pear
Chenopodiaceae			Goosefoot Family
enenopealaceae	*	Atriplex semibaccata	Australian salthush
	*	Chenopodium album	lamb's quarters
	*	Salsola tragus	Russian thistle
Convolvulaceae			Morning-Glory Family
		Cuscuta californica	chaparral dodder
Funhorhiaceae			Snurge Family
Luphonshubeut	*	Euphorhia maculata	spotted spurge
	*	Euphorbia neolus	netty spurge
	*	Ricinus communis	castor bean
Fabaceae			Legume Family
	*	Acacia redolens	vanilla-scented wattle
	*	Melilotus albus	white sweetclover
Fagaceae			Oak Family
g		Quercus agrifolia	coast live oak
Geraniaceae			Geranium Family
Geraniaceae	*	Eradium ajautarium	
Lomiososo		Erodium cicularium	Mint Eamily
Laimaceae	*	Marruhium vulgara	white berehound
			white norenound
		Salvia apialia Salvia mellifera	
Malvaceae			Mallow Family
Marvaceae		Malacothamnus fasciculatus	chaparral mallow
Myrsinaceae			Myrsine Family
Myraniaceae	*	Lysimachia anyensis	scarlet nimpernel
Murtaceae			Murtle Family
Wyntaceae	*	Eucolyntus comoldulensis	
	*		
	*		red iron bark
Oleaceae			Olive Family
Oleaceae	*		
Dinaceae		Ciea europaea	Dine Family
Tinaceae	*	Pinus conoriensis	
Distaginaceae			Diantain Family
Flatagillaceae	*	Plantago lanceolata	Frankan Fanny
Plantanaceae			Plane-Tree or Sycamore Family
Tiantanaceae	*	Platanus x hispanica	
		Platanus ~ nispanica Platanus racemosa	
Poaceae			Grass Family
I Ualcae	*	Avena harbata	slender wild oat
	*	Avena varvala Bromus catharticus var, catharticus	
	*	Bromus diandrus	ringut grass
	*	Bromus hordeaceus	soft chess
	*	Bromus rubens	red brome
		Bi officia official	

	*	Cynodon dactylon	bermuda grass
	*	Festuca myuros	rattail sixweeks grass
		Muhlenbergia rigens	deer grass
	*	Pennisetum setaceum	crimson fountain grass
	*	Schismus barbatus	old han schismus
Polygonaceae			Buckwheat Family
		Eriogonum fasciculatum	California buckwheat
	*	Polygonum aviculare	knotweed
Rosaceae			Rose Family
		Heteromeles arbutifolia	toyon
		Rubus ursinus	California blackberry
Salicaceae			Willow Family
		Salix exigua	sandbar willow
		Salix gooddingii	Goodding's black willow
Solanaceae			Nightshade Family
		Datura wrightii	jimsonweed
	*	Nicotiana glauca	tree tobacco
Tamaricaceae			Tamarisk Family
	*	Tamarix ramosissima	saltcedar
Typhaceae			Cattail Family
		Typha latifolia	broad-leaved cattail
Ulmaceae			Elm Family
	*	Ulmus parvifolia	Chinese elm

\* - Indicates Non-Native Species

### APPENDIX A – PETERS CANYON BIKEWAY EXTENSION PROJECT Faunal Compendium

#### Class Scientific Name Family Family (Common Name) Common Name Insecta Nymphalidae **Brushfooted Butterflies** Agraulis vanillae incarnata Gulf Fritillary Cabbage White Pieridae Sulphurs Pieris rapae Reptilia Western Fence Lizard Phrynosomatidae Spiny lizards Sceloporus occidentalis Aves Accipitridae Hawks, Kites, Eagles, and Allies Red-tailed Hawk Buteo jamaicensis Aegithalidae Long-tailed Tits and Bushtits Psaltriparus minimus Bushtit Cathartidae New World Vultures Turkey Vulture Cathartes aura Columbidae Pigeons and Doves Columba livia Rock Pigeon Columbidae Pigeons and Doves Zenaida macroura Mourning Dove Corvidae Crows and Jays Aphelocoma californica California Scrub-Jay Crows and Jays American Crow Corvidae Corvus brachyrhynchos Common Raven Corvidae Crows and Jays Corvus corax Estrildidae Waxbills and Allies Lonchura punctulata Scaly-breasted Munia Fringillidae Finches and Allies Haemorhous mexicanus House Finch Fringillidae Finches and Allies Spinus psaltria Lesser Goldfinch Hirundinidae Swallows Barn Swallow Hirundo rustica Hirundinidae Swallows Stelgidopteryx serripennis Northern Rough-winged Swallow Blackbirds Red-winged Blackbird Icteridae Agelaius phoeniceus Icteridae Blackbirds Icterus bullockii Bullock's Oriole Blackbirds Hooded Oriole Icteridae Icterus cucullatus Blackbirds Brown-headed Cowbird Icteridae Molothrus ater Yellow-breasted Chats Yellow-breasted Chat Icteriidae Icteria virens Mimidae Mockingbirds and Thrashers Mimus polyglottos Northern Mockingbird Mimidae Mockingbirds and Thrashers Toxostoma redivivum California Thrasher Odontophoridae New World Quail Callipepla californica California Quail Common Yellowthroat Parulidae Wood-Warblers Geothlypis trichas Passerellidae New World Sparrows Junco hyemalis Dark-eyed Junco

	Passerellidae	New World Sparrows	Melospiza melodia	Song Sparrow
	Passerellidae	New World Sparrows	Melozone crissalis	California Towhee
	Passerellidae	New World Sparrows	Pipilo maculatus	Spotted Towhee
	Passeridae	Old World Sparrows	Passer domesticus	House Sparrow
	Polioptilidae	Gnatcatchers and gnatwrens	Polioptila californica californica	coastal California gnatcatcher
	Trochilidae	Hummingbirds	Calypte anna	Anna's Hummingbird
	Troglodytidae	Wrens	Thryomanes bewickii	Bewick's Wren
	Tyrannidae	Tyrant Flycatchers	Sayornis nigricans	Black Phoebe
	Vireonidae	Vireos	Vireo bellii pusillus	Least Bell's Vireo
Mammali	a			
	Leporidae	Rabbits and Hares	Sylvilagus bachmani	Brush Rabbit
	Sciuridae	Squirrels, Chipmunks and Marmots	Ostospermophilus beecheyi	California Ground Squirrel

**APPENDIX G – Site Photos** 

### **APPENDIX G - SITE PHOTOGRAPHS**



Site Photograph 1 - View northernmost section of proposed Class I Bikeway as viewed from the intersection of Canyon View Ave and Jamboree Road, facing south.



Site Photograph 2 - View of Diegan Coastal Sage Scrub / California Buckwheat Scrub along the western boundary of BSA and west of Jamboree Road, facing west



Site Photograph 3 - View of center median of Jamboree Road, and adjacent Diegan Coastal Sage Scrub vegetation community along west side of Jamboree Road, facing northwest



Site Photograph 4 – View of several ephemeral drainages and culverts beneath intersection of Canyon View Ave and Jamboree Road, facing northeast.



Site Photograph 5 – Aerial view of Jamboree Road 0.8 miles south of Canyon View Ave and Jamboree Road Intersection, facing North. Image depicts adjacent Coastal Sage Scrub along western boundary of Jamboree Road.



Site Photograph 6 – Aerial View of northern portion of BSA along Jamboree Road just south of Canyon View Ave, facing southeast.



Site Photograph 7 – View of Jamboree Road and adjacent California State Route 261 facing south towards Pioneer Road.



Site Photograph 8 – Aerial view of Pioneer Road and Jamboree Road Intersection, facing west. Image depicts southern end of Class I bikeway and northern end of Class II bike lane



Site Photograph 9 – Aerial view of Pioneer Road just south of Reynolds Ave, facing north. Image depicts western edge of Class II bike lane along left side of Pioneer Road.



Site Photograph 10 – Aerial view of intersection of Pioneer Way and Tustin Ranch Road just south of Pioneer Road, facing north. Image depicts southern terminus of Class II bike lane along left side of Pioneer Way

# Appendix C Archaeological Survey Report



#### ARCHAEOLOGICAL SURVEY REPORT FOR THE PETERS CANYON BIKEWAY EXTENSION PROJECT, TUSTIN AND ORANGE, ORANGE COUNTY, CALIFORNIA

California Department of Transportation, District 12 Federal Project Number: CML-5955(115)

#### Prepared by

October, 2020 Date

Monica Strauss, M.A., RPA PQS-Principal Investigator Prehistoric and Historic Archaeology Environmental Science Associates 626 Wilshire Boulevard Suite 1100 Los Angeles, CA 90017

#### **Reviewed by:**

Jonathan Wright PQS-Lead Archaeological Surveyor California Department of Transportation, District 12 1750 East 4th Street, Suite 100 Santa Ana, CA 92705

Approved by:

Charles Baker Senior Environmental Planner California Department of Transportation, District 12 1750 East 4th Street, Suite 100 Santa Ana, CA 92705

> USGS topographic quadrangle: Orange, California APE Acreage: approximately 15.95 acres Resources: Negative Survey Date Completed: October 2020

Date

Date

This page intentionally left blank

### Summary of Findings

Orange County Public Works (OCPW) proposes to construct a Class I bike line along a 1.15mile stretch of Jamboree Road from Canyon View to Pioneer Road, and a 1.55-mile-long Class II bike lane on Pioneer Road within the cities of Tustin and Orange, Orange County. The proposed project would connect the existing Peters Canyon Trail to Orange County's larger bikeway network and would include: the construction of a Class I multi-use bikeway and sidewalk along the west side of Jamboree Road; striping of 8-foot-wide buffered Class II bike lanes on both sides of Pioneer Road; installation of bike path wayfinding signage; and construction of retaining walls with V-ditches, tree removal, landscaping, drainage systems and decorative fence installations, utility relocation, and sidewalk removal along the west side of Jamboree Road.

The California Department of Transportation (Caltrans) is the lead agency under the National Environmental Policy Act (NEPA) and OCPW is the lead agency under the California Environmental Quality Act (CEQA). 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 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016, and executed by the Federal Highway Administration (FHWA) and Caltrans.

The purpose of this study is to identify any cultural resources that could be affected by the undertaking. This report details the methods and results of this study, which included a records search, a Sacred Lands File (SLF) search, Native American consultation, a geoarchaeological review, and a field survey. The studies for this undertaking were carried out in a manner consistent with Caltrans' regulatory responsibilities under Section 106 of the National Historic Preservation Act (36 CFR Part 800) and pursuant to the January 2014 First Amended Programmatic Agreement among the Federal Highway Administration, 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 (Section 106 PA).

In accordance with Section 106 PA Stipulation VIII.A, an Area of Potential Effects (APE) was established for the undertaking. The approximately 15.95-acre horizontal APE includes the following components: the construction footprint for the Class I multi-use/combined bikeway and temporary construction area along the west side of Jamboree Road; the entire roadway of Pioneer Road where Class II striping would be established; two staging areas located within existing parking lots in Peters Canyon Regional Park; and access routes to Staging Areas #1 and #2 from a paved entrance off of Jamboree Road and from Canyon View Avenue, respectively. The vertical APE includes the anticipated maximum depth of ground disturbance of 15 feet below ground surface for grading activities, and the maximum height of aboveground components is expected to reach 3 to 8 feet in height for the construction of retaining walls.

A records search for the project was conducted on July 23, 2020, by staff at the California Historical Resources Information System (CHRIS) South Central Coastal Information Center (SCCIC). The records search included a review of all recorded cultural resources and previous studies within the APE and a 1-mile radius around the APE. The records search results indicate 89 cultural resources studies have been conducted within the records search study area. Of these 89 studies, 12 overlap the APE with approximately 80 percent of the APE having been included as part of previous cultural resources surveys. The records search results also indicate that 35 cultural resources have been previously recorded within a 1-mile radius of the APE. Of these 35 cultural resources, 21 are prehistoric archaeological sites, seven are historic-period built resources, and four are prehistoric isolates. None of the 35 previously recorded cultural resources are located within the APE.

Native American consultation was undertaken for the proposed project. An SLF search was conducted by the California Native American Heritage Commission (NAHC) on June 9, 2020 indicating no known Native American cultural resources are within the APE or its vicinity. The NAHC included a list of 15 California Native American Tribes who may also have knowledge of cultural resources in the area. Outreach letters were sent to all 15 Native American contacts listed on the NAHC's contact list via certified mail and email on August 17, 2020. Follow-up phone calls were placed on August 26 and September 2, 2020. Of the 15 Native American representatives contacted, six responses have been received to date. The responses are summarized in the *Summary of Native American Consultation* section of this report. No Native American cultural resources have been identified within the APE based on the consultation conducted to date.

On August 13 and October 11, 2020, ESA conducted a pedestrian survey of the APE to identify archaeological resources that could be impacted by project-related ground-disturbing activities. Given the developed nature of the APE numerous survey strategies were employed including reconnaissance (windshield) survey of paved areas, and mixed systematic and opportunistic survey in areas where ground surface was visible. Areas subject to systematic survey were surveyed using transects spaced at intervals no greater than 15 meters (approximately 50 feet). No cultural resources were identified as a result of the survey

No archaeological resources were identified in the APE as a result of the archival research or field survey. Given the highly disturbed nature of the APE, which is largely composed of residential development, the likelihood of encountering intact subsurface archaeological deposits during proposed project construction is low. This study concludes that no cultural resources qualifying as historic properties pursuant to Section 106 of the NHPA will be adversely affected as a result of the proposed project; a finding of **No Historic Properties Affected** is recommended for this undertaking. It is Caltrans' policy to avoid cultural resources whenever possible. If buried cultural materials are encountered during construction, it is Caltrans' policy that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find.

## Table of Contents

Summary of Findings	i
Table of Contents	iii
Introduction	1
Project Location and Description	2
Project Location	2
Project Description	2
Area of Potential Effects	
Sources Consulted	
Summary of Records Search Methods and Results	
Summary of Native American Consultation	9
Background	10
Environment	11
Ethnography	12
Prehistory	13
History	14
Geoarchaeological Review	17
Field Methods	19
Study Findings and Conclusions	20
References Cited	21

#### Appendices

Appendix A. Maps	A-1
Appendix B. Records Search Results	<b>B-</b> 1

#### Tables

Table 1_Previous Cultural Resources Investigations Within 1 Mile of the APE	4
Table 2_Previously Recorded Archaeological Resources Within 1 Mile of the APE	7
Table 3_Native American Correspondence Summary	9

This page intentionally left blank

### Introduction

Orange County Public Works (OCPW) proposes to construct a Class I bike lane along a 1.15mile stretch of Jamboree Road from Canyon View to Pioneer Road, and a 1.55-mile-long Class II bike lane on Pioneer Road within the cities of Tustin and Orange, Orange County. The proposed project would connect the existing Peters Canyon Trail to Orange County's larger bikeway network and would include: the construction of a Class I multi-use bikeway and sidewalk along the west side of Jamboree Road; striping of 8-foot-wide buffered Class II bike lanes on both sides of Pioneer Road; installation of bike path wayfinding signage; and construction of retaining walls with V-ditches, tree removal, landscaping, drainage systems and decorative fence installations, utility relocation, and sidewalk removal along the west side of Jamboree Road.

An Initial Study Mitigated Negative Declaration (ISMND) is being prepared for the proposed project pursuant to the statutes of the California Environmental Quality Act (CEQA). OCPW is the lead agency under CEQA. The proposed project is also eligible for Bicycle Improvement Corridor Program (BCIP) funding and is therefore subject to review and approval by California Department of Transportation (Caltrans), District 12 as the lead agency under the National Environmental Policy Act (NEPA). 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 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016, and executed by the Federal Highway Administration (FHWA) and Caltrans.

The purpose of this study is to identify any cultural resources that could be affected by the undertaking. This report details the methods and results of this study, which included a records search, a Sacred Lands File (SLF) search, Native American consultation, a geoarchaeological review, and a field survey. The studies for this undertaking were carried out in a manner consistent with Caltrans' regulatory responsibilities under Section 106 of the National Historic Preservation Act (36 CFR Part 800) and pursuant to the January 2014 First Amended Programmatic Agreement among the Federal Highway Administration, 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 (Section 106 PA).

ESA personnel involved in the preparation of this report include: Monica Strauss, M.A., RPA, Principal Investigator; Michael Vader, B.A., report author; and Matthew Gonzalez, B.A., and Kyle Garcia, M.A., surveyors. Ms. Strauss has 24 years of experience in cultural resources management, understands Caltrans procedures and policies, and meets the Secretary of the Interior's Professional Qualification Standards (PQS) for archaeology as well as Caltrans' PQS as a Principal Investigator for prehistoric and historic archaeology. Mr. Vader, Mr. Gonzalez, and Mr. Garcia have 15, 14, 17 years of experience, respectively, in southern California conducting cultural resources surveys and drafting Section 106 and CEQA-compliant technical reports. Mr. Vader, Mr. Gonzalez, and Mr. Garcia all meet Caltrans' PQS as Lead Archaeological Surveyor.

### **Project Location and Description**

### **Project Location**

The proposed project is located in the cities of Tustin and Orange, within east-central Orange County (see Figure 1, Attachment 1 of the HPSR). Specifically, the proposed project is located in unsectioned portions of Township 4 and 5 South, Range 8 and 9 West on the Orange, CA 7.5-minute topographic quadrangle (see Figure 2, Attachment 1 of the HPSR). The proposed project is located along a 1.15-mile stretch of Jamboree Road from Canyon View to Pioneer Road, and a 1.55-mile stretch on Pioneer Road from Jamboree Road to Pioneer Way.

### **Project Description**

OCPW proposes to construct a Class I bike lane along Jamboree Road from Canyon View to Pioneer Road, and Class II bike lanes along Pioneer Road from Jamboree Road to Pioneer Way within the cities of Tustin and Orange, Orange County. The project proposes construction of a bike and pedestrian path that will connect the Peters Canyon Trail to existing bikeways at the intersections of Jamboree Road with Canyon View Avenue and Pioneer Road with Pioneer Way in the cities of Orange and Tustin. The project is located on Jamboree Road (between Canyon View Avenue and Pioneer Road) and proposes the construction of a Class I multi-use/combined bikeway along the west side (approximately 1.5 miles long).

Project features along Jamboree Road include:

- installation of bike path and bike lanes way finding signage;
- construction of an approximately 3 to 8-foot high retaining wall and/or grading to a maximum depth of 15 feet;
- relocation of utilities (water meters, high voltage electrical cabinets, pull boxes, valves boxes, fire hydrants, etc.);
- removal of mature trees to accommodate the proposed bike path width;
- replacement of existing irrigation system and landscape;
- and, installation of decorative fence along the west side of Jamboree Road.

In addition, the project includes intersection improvements at Jamboree Road and Pioneer Road to connect the existing Class II bike lane on the south side of the intersection to the proposed Class I bike lane along Jamboree Road. A striped 8-foot wide buffered Class II bike lane (approximately 1.55 miles) would be designated on both sides of Pioneer Road to Pioneer Way. No additional improvements are proposed along Pioneer Road.
Two staging areas (Staging Areas #1 and #2) would be located within existing parking in Peters Canyon Regional Park. Staging Area #1 would be located just west of Jamboree Road, immediately east of the Peters Canyon Regional Park and Bikeway, approximately 0.20 miles south of Jamboree Road and Canyon View Avenue intersection. Staging Area #2 is located immediately south of Canyon View Avenue approximately 0.15 miles west of its intersection with Jamboree Road within the Peters Canyon Regional Park parking lot. Staging Area #1 would be access via a paved entrance road off of Jamboree Road and Staging Area #2 would be accessed via Canyon View Avenue.

## **Area of Potential Effects**

In accordance with Section 106 PA Stipulation VIII.A, the Area of Potential Effects (APE) for the proposed project was established in consultation with Jonathan Wright, PQS Lead Archaeological Surveyor and Caltrans Local Assistance Engineer, Tifini Tran on November 3, 2020. The APE map is included as Figure 3, Attachment 1 of the HPSR.

In accordance with Section 106 PA Stipulation VIII.A, an Area of Potential Effects (APE) was established for the undertaking. The approximately 15.95-acre horizontal APE includes the following components: the construction footprint for the Class I multi-use/combined bikeway and temporary construction area along the west side of Jamboree Road; the entire roadway of Pioneer Road where Class II striping would be established; two staging areas located within existing parking lots in Peters Canyon Regional Park; and access routes to Staging Areas #1 and #2 from a paved entrance off of Jamboree Road and from Canyon View Avenue, respectively. The vertical APE includes the anticipated maximum depth of ground disturbance of 15 feet below ground surface for grading activities, and the maximum height of aboveground components is expected to reach 3 to 8 feet in height for the construction of retaining walls.

# Sources Consulted

## **Summary of Records Search Methods and Results**

A records search for the project was conducted on July 23, 2020, by staff at the California Historical Resources Inventory System (CHRIS) South Central Coastal Information Center (SCCIC) housed at California State University, Fullerton. The records search included a review of all recorded cultural resources and previous studies within the APE and a 1-mile radius around the APE. The California Points of Historical Interest, the California Historical Landmarks, the California Register of Historical Resources (CRHR), the National Register of Historic Places (NRHP), and the California Historical Resources Inventory listings were also reviewed for resources within or immediately adjacent to the APE. The records search results are included in **Appendix B**, Records Search Results, of this report.

### **Previous Cultural Resources Studies**

The records search results indicate that 89 cultural resources studies have been conducted within a 1-mile radius of the APE. Of these 89 previous studies, 12 overlap the APE (**Table 1**). Approximately 80 percent of the 1-mile records search radius has been included in previous cultural resources surveys and the entirety of the APE has been included in previous cultural resources surveys.

Author	EIC # (OR-)	Title	Date
Anonymous	00907	Cultural Resources Investigation of the Loma Ridge Project Site	1988
Anonymous	01485	Archaeological Test Investigations at CA-ORA-1457/h Supplemental Report for the Eastern Transportation Corridor Orange County, California	1996
Anonymous	02108	Historic Property Survey Report for the Proposed Eastern Transportation Corridor, Orange County	1991
Anonymous	02534*	Annual Report to The Irvine Company from Archaeological Research, Inc.	1976
Anonymous	00137	Archaeological Survey Report on a Parcel of Land Located in the Cowan Heights Area of the County of Orange	1976
Anonymous	00274*	Report of Archaeological Resources Survey Conducted for Laguna and Peter's Canyons	1978
Archer, Gavin	03708	Final Report on Archaeological and Paleontological Monitoring for the Portola Parkway Chevron Project	2008
Benner, Michael A.	03347	Supplemental Environmental Impact Statement for the Eastern Transportation Corridor TCA EIS 2-1	1992
Bissell, Ronald M.	00983*	Cultural Resources Reconnaissance of East Orange Planning Area 1, 1,800 Acres in Eastern Orange County, California	1989
Bissell, Ronald M.	01367*	Excavations at CA-ORA-184B for the Irvine Ranch Water District Peters Canyon Wash, Orange County, California	1994
Bonifacio Marco	02149	Cultural Resources Reconnaissance of the Newport Boulevard Widening, Phase Ii, Cowan Heights Drive to Orange City Limits, Orange County, California	1999
Bonner, Wayne	03808	Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate LA33842 (Cedar Grove Park), 11385 Pioneer Road, Tustin, Orange County, California	2009
Bonner, Wayne	04142	LA54071 (Santiago College) 8045 East Chapman Avenue, Orange, CA 92869	2011
Bonner, Wayne	04155	Cedar Grove LA33842-E, 11385 Pioneer Road, Tustin, CA 92782	2011
Bonner, Wayne	04248	Cultural Resources Records Search and Site Visit Results for InSite towers, LLC Candidate CA903C (Orange Co. Hub), 9764 Handy Creek Road, Orange, Orange County, CA	2012
	00040	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate LA03594D (Mountain Union), 1973 Peters Canyon Road,	0007
Bonner, Wayne H.	03649	Orange, Orange County, California Cultural Resources Records Search and Site Visit Results for AT&T	2007
Bonner, Wayne H.	03653	Wireless Candidate OC057-02 (Jamboree), 10200 Pioneer Road, Tustin, Orange County, California	2007
Bonner, Wayne, Williams, Sarah, and Crawford, Kathleen	04263	Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate LA54071A (Santiago College) 8045 East Chapman Avenue, Orange, Orange County, California	2012
Brechbiel, Brant A.	01742	Cultural Resources Records Search and Survey Report for a Pacific Bell Mobile Services Telecommunications Facility: Cm 389-12 in the City of Orange, California	1998
Breece, Bill and Beth Padon	00648	Cultural Resource Survey: Archaeological Resources: Foothill Transportation Corridor, Phase li	1982
Breece, William H.	00975	Results of the Data Recovery Program at CA-ORA-556 City of Los Angeles, California	1989

TABLE 1PREVIOUS CULTURAL RESOURCES INVESTIGATIONS WITHIN 1 MILE OF THE APE

Archaeological and Paleontological Assessment of CA-ORA-557 Orange         Breece, William H.       01091       County, California       1991         Breece, William H. and Jane       Test Level Investigations at CA-ORA-184 and CA-ORA-548 Peters         Rosenthal       00936       Canyon, Tustin, California       1988         Breece, William H., Rosenthal,       1988       1988         Jane, and Beth Padon       00937       Test Level Investigations at CA-ORA-556 City of Orange, California       1988         Breece, William, Jane       The Results of the Test Phase and Data Recovery Program at Ca ORA-       1988         Breece, William, Jane       The Results of the Test Phase and Data Recovery Program at Ca ORA-         Rosenthal, and Beth Padon       00961       772 Tustin, California       1988         Cameron, Constance       01175       Plant Near Irvine Park, Orange County, California       1991         Archaeological Resources Assessment Conducted for Proposed Irvine       1979         Cooley, Theodore G.       01099*       Ranch Water District Pipeline Right of Ways       1979
Breece, William H. and Jane       Test Level Investigations at CA-ORA-184 and CA-ORA-548 Peters         Rosenthal       00936       Canyon, Tustin, California       1988         Breece, William H., Rosenthal,       Jane, and Beth Padon       00937       Test Level Investigations at CA-ORA-556 City of Orange, California       1988         Breece, William, Jane, and Beth Padon       00937       Test Level Investigations at CA-ORA-556 City of Orange, California       1988         Breece, William, Jane       The Results of the Test Phase and Data Recovery Program at Ca ORA-       1988         Rosenthal, and Beth Padon       00961       772 Tustin, California       1988         Cameron, Constance       01175       Plant Near Irvine Park, Orange County, California       1991         Archaeological Resources Assessment Conducted for Proposed Irvine       1979         Cooley, Theodore G.       01099*       Ranch Water District Pipeline Right of Ways       1979
Rosenthal       00936       Canyon, Tustin, California       1988         Breece, William H., Rosenthal,       Jane, and Beth Padon       00937       Test Level Investigations at CA-ORA-556 City of Orange, California       1988         Breece, William, Jane       The Results of the Test Phase and Data Recovery Program at Ca ORA-         Rosenthal, and Beth Padon       00961       772 Tustin, California       1988         An Archaeological Assessment for the Santiago Reservoir Water Filtration       1988         Cameron, Constance       01175       Plant Near Invine Park, Orange County, California       1991         Archaeological Resources Assessment Conducted for Proposed Irvine       1979
Jane, and Beth Padon       00937       Test Level Investigations at CA-ORA-556 City of Orange, California       1988         Breece, William, Jane       The Results of the Test Phase and Data Recovery Program at Ca ORA- Rosenthal, and Beth Padon       00961       772 Tustin, California       1988         An Archaeological Assessment for the Santiago Reservoir Water Filtration       1988         Cameron, Constance       01175       Plant Near Irvine Park, Orange County, California       1991         Archaeological Resources Assessment Conducted for Proposed Irvine       1999         Cooley, Theodore G.       01099*       Ranch Water District Pipeline Right of Ways       1979
Breece, William, Jane       The Results of the Test Phase and Data Recovery Program at Ca ORA-         Rosenthal, and Beth Padon       00961       772 Tustin, California       1988         An Archaeological Assessment for the Santiago Reservoir Water Filtration       1988         Cameron, Constance       01175       Plant Near Irvine Park, Orange County, California       1991         Archaeological Resources Assessment Conducted for Proposed Irvine       Archaeological Resources Assessment Of Ways       1979
Rosentnal, and Beth Padon       00961       772 Tustin, California       1988         An Archaeological Assessment for the Santiago Reservoir Water Filtration       1991         Cameron, Constance       01175       Plant Near Irvine Park, Orange County, California       1991         Archaeological Resources Assessment Conducted for Proposed Irvine       1991         Cooley, Theodore G.       01099*       Ranch Water District Pipeline Right of Ways       1979
Cameron, Constance         01175         Plant Near Irvine Park, Orange County, California         1991           Archaeological Resources Assessment Conducted for Proposed Irvine         Archaeological Resources Assessment Conducted for Proposed Irvine         1991           Cooley, Theodore G.         01099*         Ranch Water District Pipeline Right of Ways         1979
Archaeological Resources Assessment Conducted for Proposed Irvine           Cooley, Theodore G.         01099*           Ranch Water District Pipeline Right of Ways         1979
Archaeological Survey Report on 1.5 Acres of Land Located in the Lemon Desantels, Roger 00133 Heights Area of the County of Orange. 1976
Cultural Resource Investigation for the Loma Ridge Project Site, Orange
Desautels, Nancy A. 01103 County, California 1990
Desautels, Nancy A.       01115       Communication Center Orange County, California       1991
Desautels, Roger J. 00059 the Situation Resulting From My Archaeological Survey. 1976
Archaeological Survey Report on Lot 13 - Irvine Tract 694 - Assessor's
Desautels, Roger J. 00062 California 1976
Archaeological Report on the Survey and Field Testing of the Gail W. Desautels, Roger J. 00080 Sponsellor Property in Lemon Heights Area, County of Orange, California 1976
Archaeological Survey Report on a 1.5 Acre Parcel of Land Located in the
Desautels, Roger J. 00085 Cowan Heights Area of Orange County, California N.d. No. 76-7-13 1976 Archaeological Survey Report on Tentative Tract No 9389 Located in the
Desautels, Roger J. 00109 Lemon Heights Area of the County of Orange, California 1976
Archaeological Survey Report on 3 Parcels of Land Located in the Lemon Desautels, Roger J. 00130 Heights Area of the County of Orange 1976
Archaeological Survey Report on a Three Acre Parcel of Land Located in Desautels Roger I 00136 the Cowan Heights Area of the County of Orange 1976
Archaeological Survey Report on Tt 9688 Located in the Lemon Heights
Desautels, Roger J. 00151 Area of the County of Orange 1977
Archaeological Survey Report on Two Acres of Land Located in the Lemon           Desautels, Roger J.         00172         Heights Area of the County of Orange         1977
Archaeological Survey Report on Lot 38 Located in the Lemon Heights
Final Phase 2 Archaeological Testing Evaluation of Irvine Ranch Cultural
Resources: Santiago Hill II Planned Community (SHIPC)-tract Maps Nos.
Taniguchi 02882 I-tract Map No. 16514 and the East Orange Plan 2004
Dice, Michael and Kenneth J. Phase III Cultural Resources Data Recovery Program, CA-ORA-556, City
Lord 04480 of Orange, Orange County, California 2007
Burkenroad, E. Gardner, and T. Archaeological, Historical/Ethnohistorical, and Paleontological Assessment,
Mabry         00622*         Weir Canyon Park-road Study, Orange County, California         1981
Drover, Christopher 03824 A Cultural Resources Inventory of Planning Areas 1 & 2, Irvine, California 2000
Cultural Resource Assessment for Pacific Bell Mobile Services Facility Cm
Duke, Curt 01979 709-02, County of Orange, California 1999 Cultural Resource Assessment for Pacific Bell Mobile Services Facility Cm
Duke, Curt     02145     494-03, County of Orange     2000
Cultural Resource Assessment at & T Wireless Services Facility No.           Duke, Curt         02706         13220a Orange County, California         2002
Section 106 Review of a Mountain Union Telecom Telecommunications
Project 592-1e050 Planned at 1973 Peters Canyon Road, Santa Ana,
Testing and Evaluation Report for Archaeological Site CA-ORA-584 at the
Fulton, Phil         03282         Outdoor Education Camp, City and County of Orange, California         2005
Cultural Resources Assessment, West Loma Restoration Project, Orange           Fulton, Terri         04559           County, California         2015

Author	EIC # (OR-)	Title	Date
Fulton, Terri and Deborah McLean	04084	Cultural Resource Assessment of 22 Natural Treatment System Facility Sites Within the San Diego Creek Watershed - Natural Treatment System Project, Irvine Ranch Water District, Orange County, California	2005
Garcia, Kyle H. and Marcy Rockman	03600	Results of Archaeological Survey and Monitoring for Southern California Edison's Pole Replacements After Santiago Fire Along Santiago Canyon Road, Modjeska Canyon Road, and Hicks Canyon Road; Orange County, California; Jo:6259-0468	2007
Hale, Micah	04287	Cultural Resources Inventory for the Orange County Fire Authority Project, Orange County, California	2012
Hoover, Anna M.	02373	Archaeological Monitoring for Newport Boulevard Phase II Widening Project, Brier Lane to Orange City Limit, Orange County, California	2000
Jertberg, Patricia R.	01040*	Archaeological and Paleontological Monitoring Report for Tract 13627	1990
Jertberg, Patricia R.	01079	Archaeological Monitoring Report for Tract #13786	1990
Jertberg, Patricia R.	01132	Monitoring and Supplemental Data Recovery at CA-ORA-184a/548 Peters Canyon, Tustin, California.	1990
Jertberg, Patricia R. and Jane Rosenthal	01062	Archaeological Monitoring Report for the Peters Canyon Wash Mitigation Project	1990
Lapin, Philippe	02061	Cultural Resource Assessment for Pacific Bell Wireless Facility Cm 441-01, County of Orange, California	2000
Lapin, Philippe and Strudwick, Ivan	02282	Results of Archaeological Monitoring at Sheridan Place Project, Tracts 15711 and 15712, City of Irvine, Orange County, Ca	2000
Loftus, Shannon	04188	Cultural Resources Records Search and Site Survey, Vista Towers Site OCFA Orange County Fire Authority 1 Fire Authority Road, Irvine, Orange County, California 92602	2011
Love, Bruce	02490	The Proposed Undertaking Consists of Landscaping in a Portion of the Existing Median of Portola Parkway Near the Intersection of SR 261, in the City of Irvine, Orange County	2002
Love, Bruce	02499	The Proposed Undertaking Involves the Construction of a Drainage Swale Along the Southeast Shoulder of State Route 261, Near the Intersection of SR 261 and Portola Parkway, in the City of Irvine, California	2001
Marken, Mitch	03840	Phase I Archaeological Assessment for the IRWD Baker Regional Water Treatment Plant Project, Orange County, CA	2009
Mason, Roger D.	00752*	Eastern Corridor Alignment Study, Orange County, California; Volume II: Prehistory and History	1984
Mason, Roger D.	01026	Cultural Resources Survey Report Santiago Canyon Road Alignment Study Orange County, California	1990
Maxon, Patrick O.	02150	Archaeological Test and Data Recovery Excavation of 30-001537 (CA- ORA-1537), a Small Rock Shelter in Cowan Heights, Orange County	2000
Neitzel, Jill	00550	Report on Archaeological Record Search and Field Survey of the Diemer Pipeline	1977
Padon, Beth	00847	Archaeological Resource Inventory City of Irvine and its Sphere of Influence	1985
Padon, Beth	00876	Archaeological Review of Handy Creek Compensation Area	1987
Perry, Robert	00200	Archaeological Survey Report on Four Parcels of Land Located in the Lemon Heights Area of the County of Orange	1977
Phil Fulton	03761	Cultural Resource Assessment: Verizon Wireless Services, Orchard Hills Facility, City of Irvine, Orange County, California	2009
Rosenthal, Jane	00978	Archaeological Test Level Investigation at CA-ORA-1153 Orange, California	1989
Rosenthal, Jane	01127*	Past to Present: Cultural and Scientific Resources, an Archival Inventory Irvine Ranch Open Space Reserve Orange County, California	1991
Rosenthal, Jane, Beth Padon, and Scott Crownover	01078	Archaeological Investigations at CA-ORA-184 Locus B, CA-ORA-547 Locus B, CA-ORA-548 Extension, CA-ORA-771 and CA-ORA-771 Extension, Peters Canyon, Tustin, California	1990
Sample, Lloyd	02621	Final Archaeological and Paleontological Monitoring Results for the Handy Creek Sediment Trap Project, City and County of Orange, California	2003
Schmidt, James J.	02183	Phase I Archaeological Investigation Santiago Hills Development, Phase II Orange County	2000
Schroth, Adella	00305*	The History of Archaeological Research on Irvine Ranch Property: the Evolution of a Company Tradition	1979
Singer, Clay A.	00494*	Preliminary Assessment of Cultural Resources Within the Proposed Peters Canyon Regional Park, Orange County,	1976

Peters Canyon Bikeway Extension Project

Author	EIC # (OR-)	Title	Date
Smith, Brooks R. and Shannon	· · · · ·	Results of Archaeological Monitoring Northpark, Sector 5 Lower Peters	
Younger	03243	Canyon, Irvine Orange County, California	2000
Stevens, Dave and Patrick Maxon	04360	Final Paleontological and Archaeological Monitoring Report for Tustin Ranch Project, Tract 15601, City of Tustin, California	1998
Strozier, Hardy	02225*	The Irvine Company Planning Process and California Archaeology- A Review and Critique	1978
Strudwick, Ivan H.	01917	Results of Archaeological Testing of a Portion of CA-ORA-1238/h Within the Portola Parkway Extension Project, Orange County, California	1999
Strudwick, Ivan H.	03249	Results of Archaeological Testing of a Portion of CA-ORA-1238/h Within the Portola Parkway Extension Project, Orange County, California	1999
Strudwick, Ivan H.	03340	Cultural Resource Assessment Survey for Santiago Canyon College in the City of Orange, Orange County, California	2004
Van Horn, David M.	00616	Archaeological Survey Report: Tentative Parcel Map No.465 Located in Lemon Heights, County of Orange, California	1981
Webb, Lois M.	01844	Request for Finding of Effect for the Proposed Eastern Transportation Corridor	1991
Whitney-Desautels, Nancy A.	00048	Archaeological Report: Chapman Bypass Project.	1977
Wlodarski, Robert J.	03943	Record Search and field reconnaissance for proposed AT&T Wireless Telecommunications Site OC0147 (Orchard Hills), located northeast of Portola Parkway and Culver Drive, Irvine, Orange County, California	2010
*Indicates study overlaps APE			

#### **Previously Recorded Cultural Resources**

The records search results indicate that 35 cultural resources have been previously recorded within a 1-mile radius of the APE (**Table 2**). Of these 35 cultural resources, 21 are prehistoric archaeological sites (P-30-000184, -000547, -000548, -000556, -000557, -000625, -000626, -000770, -000771, -000772, -001068, -001153, -001218, 001219, -001220, -001240, -001471, -001510, 001549, -001765, and -001766), seven are historic-period archaeological sites (P-30-001198, -001200, -001359, -001548, -001771, -162283, and -176748), three are multicomponent archaeological sites (P-30-001195, -001238, and -001457), three are historic-period built resources (P-30-001198 [commemorative marker], -162283 [Irvine Park], and -176748 [Highline Canal]), and four are prehistoric isolates (P-30-100230, -100332, -100333, and -100375). None of the 35 previously recorded cultural resources are located within the APE; the closest resource being the Highline Canal (P-30-176748) located 0.15 mile from the APE.

			-		
Primary # (P-30-)	Permanent Trinomial (CA-ORA-)	Description	Date Recorded	NRHP/CRHR Eligibility	Approximate Distance from APE
000184	000184	Prehistoric archaeological site: habitation site	1966/1984/1991	Not evaluated	0.40 miles
000547	000547	Prehistoric archaeological site: lithic scatter and quarry	1976	Not evaluated	0.25 miles
000548	000548	Prehistoric archaeological site: lithic and groundstone scatter	1976/1978/1984	Not evaluated	0.25 miles
000556	000556	Prehistoric archaeological site: lithic and groundstone scatter	1974/1976/1978/ 1980/1984	Not evaluated	0.75 miles
000557	000557	Prehistoric archaeological site: lithic and groundstone scatter with midden soil	1974/1976/1984	Not evaluated	0.35 miles
000625	000625	Prehistoric archaeological site: bedrock milling feature	1977/1984	Not evaluated	0.90 miles

TABLE 2 PREVIOUSLY RECORDED ARCHAEOLOGICAL RESOURCES WITHIN 1 MILE OF THE APE

Primary # (P-30-)	Permanent Trinomial (CA-ORA-)	Description	Date Recorded	NRHP/CRHR Eligibility	Approximate Distance from APE
000626	000626	Prehistoric archaeological site: lithic and groundstone scatter	1977/1984	Not evaluated	0.95 miles
000770	000770	Prehistoric archaeological site: lithic and groundstone scatter	1978/1982/1984 /1990	Not evaluated	0.90 miles
000771	000771	Prehistoric archaeological site: lithic and groundstone scatter	1978/1984	Not evaluated	0.40 miles
000772	000772	Prehistoric archaeological site: lithic and groundstone scatter	1978/1984	Not evaluated	0.40 miles
001068	001068	Prehistoric archaeological site: lithic Scatter	1984/1990	Not evaluated	1.0 miles
001153	001153	Prehistoric archaeological site: lithic, groundstone and shell scatter	1988	Not evaluated	0.45 miles
001195	001195/H	Multicomponent archaeological site: prehistoric rock art and historic-period graffiti	1984	Not evaluated	0.30 miles
001198	001198H	Historic-period built resource: marker commemorating the U.S.S Maine	1984	Not evaluated	0.80 miles
001200	001200H	Historic-period archaeological site: remnants of concrete latrines	1984	Not evaluated	0.25 miles
001218	001218	Prehistoric archaeological site: lithic and groundstone scatter	1989/2004	Not eligible	0.75 miles
001219	001219	Prehistoric archaeological site: lithic and groundstone scatter	1989	Not evaluated	0.30 miles
001220	001220	Prehistoric archaeological site: lithic and groundstone scatter	1989	Not evaluated	0.60 miles
		Multicomponent archaeological site: prehistoric lithic and groundstone scatter and historic-period refuse			
001238	001238/H	scatter Probiotorio crobocological aito: lithia and groundetono	1990/1998	Not evaluated	0.80 miles
001240	001240	scatter	1990/2004/2018	Not eligible	0.80 miles
001359	001359H	Historic-period archaeological site: refuse scatter	1992	Not evaluated	0.50 miles
001457	001457/H	Multicomponent archaeological site: prehistoric Lithic and groundstone scatter and historic-period refuse scatter	1995	Not evaluated	0.25 miles
001471	001471	Prehistoric archaeological site: lithic scatter	1996	Not evaluated	0.50 miles
001510	001510	Prehistoric archaeological site: habitation site	1999	Not evaluated	0.50 miles
001548	001548H	Historic-period archaeological site: remnants of water impoundment features and associated refuse scatter	2000/2004	Not eligible	0.95 miles
001549	001549	Prehistoric archaeological site: lithic scatter	2000/2004	Not eligible	0.60 miles
001765	001765	Prehistoric archaeological site: habitation site	2016	Not evaluated	0.95 miles
001766	001766	Prehistoric archaeological site: hearth features and one metate	2016	Not evaluated	0.95 miles
001771	001771H	Historic-period archaeological site: remnants of motocross facilities	2018	Not evaluated	0.70 miles
100230	_	Prehistoric isolate: basalt core	2016	Not evaluated	0.90 miles
100332	-	Prehistoric isolate: milling stone fragment	2000	Not evaluated	0.55 miles
100333	-	Prehistoric isolate: hammerstone	2000	Not evaluated	0.25 miles
100375	-	Prehistoric isolate: metate	2006	Not evaluated	0.45 miles
162283	-	Historic-period built resource: Irvine Park	1976	NRHP and CRHR listed	0.75 miles
176748	-	Historic-period built resource: Highline Canal	2003	Not eligible	0.15 miles

### **Summary of Native American Consultation**

ESA submitted a request to the Native American Heritage Commission (NAHC) on June 8, 2020 requesting a search of the SLF for the study area and limits of work. A response was received on June 9, 2020 indicating that the SLF search results were negative. The NAHC included a list of 15 California Native American Tribes who may also have knowledge of cultural resources in the area.

Caltrans and ESA conducted outreach to all 15 Native American contacts listed on the NAHC's contact list. Letters were sent via certified mail and email on August 17, 2020. The letters included a brief project description, location information, including maps, and a summary of the SLF, and CHRIS-SCCIC searches. The letter requested that the contact provide any information on cultural resources in the vicinity of the proposed project or other concerns within 30 days of receipt of the letter. Follow-up phone calls were placed on August 26 and September 2, 2020. Of the 15 Native American representatives contacted, six responses have been received to date. Table 3 provides a summary of the consultation conducted to date and summaries of the responses received are summarized following the table. Copies of all correspondence and a contact log are included as Attachment C of the HPSR.

_		Date Letter	Date of Follow-up	Date of Follow-up	_
Contact	Tribe/Organization	Mailed	Phone Call	Phone Call	Response
					John Mesa recommends a
	Compo Bond of				Native American monitor should
Ralph Coff	Campo Band of Diegueno Mission				related ground disturbing
Chairnerson	Indians	8/17/20	8/26/20	9/2/20	activities
Robert Pinto	Ewijaanaavn Band of	0/11/20	0/20/20	5/2/20	Left voicemails. No response to
Chairperson	Kumevaav Indians	8/17/20	8/26/20	9/2/20	date
Michael Garcia, Vice	Ewijaapaayp Band of				Left voicemails. No response to
Chairperson	Kumeyaay Indians	8/17/20	8/26/20	9/2/20	date
	Gabrieleno Band of				
Andrew Salas,	Mission Indians - Kizh				Left voicemails. No response to
Chairperson	Nation	8/17/20	8/26/20	9/2/20	date
					Chairperson Morales
	Cabrielene/Tenevie See				recommends construction
Anthony Morales	Gabriel Band of Mission				notified if construction
Chairperson	Indians	8/17/20	8/26/20	-	monitoring is implemented
Sandonne Goad	Gabrielino /Tongya	6/11/20	0,20,20		Left voicemails. No response to
Chairperson	Nation	8/17/20	8/26/20	9/2/20	date
					Chairperson Dorame stated he
					would review the project
					information and would contact
	Gabrielino Tongva				family in the vicinity of the APE
Robert Dorame,	Indians of California	0/17/00	0/00/00		regarding the presence of
Chairperson	I ribal Council	8/17/20	8/26/20	-	resources.
Charles Alverez	Cabrialina Tangya Triba	0/17/00	9/26/20	0/2/20	Left voicemails. No response to
Chanes Aivarez	Gabrielino-Tongva Tribe	0/17/20	0/20/20	9/2/20	Loves Stanfield Darny requested
					a copy of the notification letter
	Juaneño Band of				be sent to her so she can
Matias Belardes,	Mission Indians				discuss the project with
Chairperson	Acjachemen Nation	8/17/20	8/26/20	-	Chairperson Belardes.

#### TABLE 3 NATIVE AMERICAN CORRESPONDENCE SUMMARY

			Date of	Date of	
Contact	Tribe/Organization	Date Letter Mailed	Follow-up Phone Call	Follow-up Phone Call	Response
	La Posta Band of	manou		T Hollo Gui	
Gwendolyn Parada, Chairperson	Diegueno Mission Indians	8/17/20	8/26/20	9/2/20	Left voicemails. No response to date
	La Posta Band of				
Javaughn Miller, Tribal Administrator	Diegueno Mission Indians	8/17/20	8/26/20	9/2/20	Left voicemails No response to date
Angela Elliott Santos,	Manzanita Band of				Left voicemails. No response to
Chairperson	Kumeyaay Nation	8/17/20	8/26/20	9/2/20	date
					Tribal administrator stated via
	Mesa Grande Band of				Linton does not provide a
Michael Linton	Diegueno Mission				response then he has no
Chairperson	Indians	8/17/20	8/26/20	-	concerns regarding the project
					Vicky Arres, Tribal Elder,
					requested the notification letter
					be sent to Joseph Ontiveros,
					I ribal Historic Preservation
					Officer. The notification letter
					8/26/20 On 9/22 Mr. Ontiveros
					replied via email stating Soboba
Scott Cozart.	Soboba Band of Luiseno				defers to tribal groups in closer
Chairperson	Indians	8/17/20	8/26/20	-	proximity to the APE
					Left voicemails for Ms. Kristie
Cody Martinez,	Sycuan Band of the				Orosco, Resource Specialist.
Chairperson	Kumeyaay Nation	8/17/20	8/26/20	9/2/20	No response to date.

In a phone call on August 26, 2020, Anthony Morales, Chairperson of the Gabrieleno/Tongva, expressed concern that project ground disturbance in native soils, particularly along Jamboree Road, could encounter archaeological resources. Chairperson Morales recommended archaeological and Native American monitoring project-related ground disturbance extend into native soils. Chairperson Morales also requested that he be notified if Native American monitoring is implemented during project-related ground disturbing activities.

In a phone call on August 26, 2020, Robert Dorame, Chairperson of the Gabrielino Tongva Indians of California Tribal Council, stated he will review the information provided in the notification letter sent on August 17, 2020 and will contact family members in the vicinity of the APE to identify if resources are present and identify concerns. To date, Chairman Dorame has not followed-up regarding additional details. A follow-up email was sent to Chairperson Dorame on September 22, 2020 to inquire if he would like to provide input on the project. No response has been received to date

In a phone call on August 26, 2020, Joyce Stanfield-Perry, Tribal Manager and Cultural Resource Director for the Juaneño Band of Mission Indians Acjachemen Nation, stated Peters Canyon is very important to the Juaneño Tribe. Ms. Perry requested the notification letter sent to Chairman Belardes on August 17, 2020, be emailed to her, so that she could discuss the project with the chairman and respond with any comments or concerns regarding the project. The notification letter was forwarded to Ms. Perry on August 26, 2020. A follow-up email was sent to Ms. Stanfield-Perry on September 22, 2020 to inquire if she would like to provide input on the project. In an email dated October 8, 2020, Ms. Stanfield-Perry recommended archaeological and Native American monitors be present for all project-related ground disturbing activities.

In a phone call on August 26, 2020, the tribal administrator for the Mesa Grand Band of Mission Indians stated that Chairperson Linton receives project notification letters and only responds to those he has concerns about. The administrator stated that if a response from Chairperson Linton is not received, then he has no concerns regarding the project. To date, no response has been received from Chairperson Linton.

In a phone call on August 26, 2020, Vicky Arres, Tribal Elder for Soboba, stated via phone Mr. Cozart is no longer Chairperson for the Soboba Band of Luiseno Indians (Soboba) and requested the notification letter be forwarded to Mr. Joseph Ontiveros, Tribal Historic Preservation Officer for Soboba. The letter was forwarded to Mr. Ontiveros on August 26, 2020. A follow-up email was sent to Mr. Ontiveros on September 22, 2020 to inquire if he has any input on the project. Mr. Ontiveros responded the same day stating the Soboba defer to tribal groups in closer proximity to the APE.

In a phone call on September 14, John Mesa of the Campo Band of Diegueno Mission Indians responded via phone call on behalf of Chairperson Ralph Goff on Sep 14 recommending a Native American monitor be present during project-related ground disturbing activities.

# Background

# Environment

Orange County lies predominantly on an alluvial plain, which is generally less than 300 feet in elevation in the west and central section. The western portion of the County is made up of a series of broad sloping plains (Downey and Tustin Plains) formed from alluvium transported from the mountains by the Santa Ana River, Santiago Creek, and other local streams. Several low-lying mesas interrupt the plains along the northern coast. Orange County is semi-enclosed by the Puente and Chino Hills to the north, the San Joaquin Hills to the south, and the Santiago Foothills and the Santa Ana Mountains to the east. The Puente and Chino Hills, which identify the northern limit of the plains, extend for 22 miles and reach a peak height of 7,780 feet. To the east and southeast of the plains are the Santa Ana Mountains, which have a peak height of 5,691 feet.

The APE is located within in a region of Orange County where the topography includes a combination of mountains, hills, flatlands, and shorelines. Historically, the varied topography within the region of the APE supported a number of landforms including estuaries, marshes, riparian corridors, prairies, coastal strands, and oak woodlands. The diversity of landforms found within the region surrounding the APE would have provided a broad base of subsistence resources to be exploited by the prehistoric inhabitants of the area.

Specifically, the APE is situated within Peters Canyon, which is characterized by coastal sage scrub and non-native grasslands in the uplands, and riparian scrub within the canyon bottoms (MBI, 2016). Wildlife species common to the canyon include red-diamond rattlesnake (*Crotalus ruber*), wrentit (*Chamaea fasciata*), California quail (*Callipepla*)

*californica*), greater roadrunner (*Geococcyx californianus*), California towhee (*Melozone crissalis*), Bewick's wren (*Thryomanes bewickii*), western scrub-jay (*Aphelocoma californica*), and desert cottontail (*Sylvilagus audubonii*) (MBI, 2016). Presently, the northern portion of the APE is bounded by Peters Canyon Regional Park and Loma Ridge, and the central and southern portions of the APE are largely bounded by residential neighborhoods.

# Ethnography

The APE is located in a region traditionally occupied by the Gabrielino. The term "Gabrielino" is a general term that refers to those Native Americans who were administered by the Spanish at the Mission San Gabriel Arcángel. Prior to European colonization, the Gabrielino occupied a diverse area that included: the watersheds of the Los Angeles, San Gabriel, and Santa Ana rivers; the Los Angeles basin; and the islands of San Clemente, San Nicolas, and Santa Catalina (Kroeber, 1925). Their neighbors included the Chumash and Tataviam to the north, the Juañeno to the south, and the Serrano and Cahuilla to the east. The Gabrielino are reported to have been second only to the Chumash in terms of population size and regional influence (Bean and Smith, 1978). The Gabrielino language was part of the Takic branch of the Uto-Aztecan language family.

The Gabrielino Indians were hunter-gatherers and lived in permanent communities located near the presence of a stable food supply. Subsistence consisted of hunting, fishing, and gathering. Small terrestrial game was hunted with deadfalls, rabbit drives, and by burning undergrowth, while larger game such as deer were hunted using bows and arrows. Fish were taken by hook and line, nets, traps, spears, and poison (Bean and Smith, 1978). The primary plant resources were the acorn, gathered in the fall and processed in mortars and pestles, and various seeds that were harvested in late spring and summer and ground with manos and metates. The seeds included chia and other sages, various grasses, and islay or holly-leafed cherry. Community populations generally ranged from 50 to 100 inhabitants, although larger settlements may have existed. The Gabrielino are estimated to have had a population numbering around 5,000 in the pre-contact period (Kroeber, 1925).

The Late Prehistoric period, spanning from approximately 1,500 years B.P. to the mission era, is the period associated with the florescence of the Gabrielino (Wallace, 1955). Coming ashore near Malibu Lagoon or Mugu Lagoon in October of 1542, Juan Rodriguez Cabrillo was the first European to make contact with the Gabrielino Indians. The Gabrielino are reported to have been second only to their Chumash neighbors in terms of population size, regional influence, and degree of sedentism (Bean and Smith, 1978).

The closest village to the APE is depicted in the Kirkman-Harriman Pictorial and Historical Map of Los Angeles County (Los Angeles Public Library, 1938) as an unnamed village located in the Santa Ana Mountains approximately 3.75 miles northeast of the APE. The next closest village to the APE was the village of *Pasbenga*, located along the Santa Ana River in what is today the City of Santa Ana, located approximately 7 miles west of the APE (McCawley, 1996).

# Prehistory

The prehistory of the region has been summarized within four major horizons or cultural periods: Early, Millingstone, Intermediate, and Late Prehistoric (Wallace, 1955; Warren, 1968). Near the coast, the oldest Early period sites date back to at least 10,000 years before present (BP). The Early period covers the interval from the first presence of humans in southern California until post-glacial times. Artifacts and cultural activities from this period represent a predominately hunting culture. Tool kits from this period include a variety of stone implements used in processing animal resources.

Occupation of the southern California mainland dates to approximately 10,000 years ago. The first inhabitants were likely maritime adapted groups, exploiting the marine resources of the region. Site CA-ORA-64, located near the head of Newport Bay, is one of the few Orange County sites that contain an early component. The component dates to about 9,500 BP and exhibits evidence a diverse subsistence strategy including shellfish collecting, fishing, and bird procurement (Cleland et al., 2007).

The Millingstone period dates to about 8,000 to 3,000 BP. The transition from the Early Period to the Millingstone period is marked by an increased emphasis on the processing of seeds and edible plants. The increased utilization of seeds is evident by the high frequencies of handstones (manos) and milling slabs (metates). Around 5,000 BP, mortar and pestles appear in the archaeological record. Mortars and pestles suggest the exploitation of acorns (Vellanoweth and Altschul, 2002).

Millingstone period sites in Orange County generally date to between 8,000 and 4,000 BP. Archaeological evidence suggests a low, stable population centered around semipermanent residential bases. These sites are located along coastal marine terraces, near the shoreline, bays, or estuaries. Satellite camps were used to take advantage of seasonally available resources. Marine resources were supplemented by seeds and small terrestrial mammals. Later Millingstone period sites indicate a growing reliance on shellfish (Cleland et al., 2007).

The Intermediate period dates to between 3,000 to 1,500 BP. Archaeological sites indicate a broader economic base, with increased reliance on hunting and marine resources. An expanded inventory of milling equipment is found at sites dated to this period. Intermediate period sites are characterized by the rise of the mortar and pestle and small projectile points (Cleland et al., 2007).

The number of Intermediate period sites in Orange County declined over time, particularly around Newport Bay. Climate changes and drier conditions led to the congregation of populations near freshwater sources. Settlement patterns indicate greater sedentism, with reduced exploitation of seasonal resources and a lack of satellite camps. Coastal terrace sites are not reoccupied during this time period. These shifts in settlement and subsistence strategies led to growing population densities, resource intensification, higher reliance on labor-intensive technologies, such as the circular fishhook, and more abundant and diverse hunting equipment. Rises in disease and inter-personal violence, visible in the

archaeological record, may be due to the increased population densities (Cleland et al., 2007).

The Late Prehistoric period began around 1,500 BP and lasted until Spanish contact in 1769. The Late Period resulted in concentration of larger populations in settlements and communities, greater utilization of the available food resources, and the development of regional subcultures (Cleland et al., 2007). Artifacts from this period include milling implements, as well as bone and shell tools and ornaments.

# History

# Spanish Era (1769-1821)

Although Spanish explorers made brief visits to the region in 1542 and 1602, sustained European exploration of southern California began in 1769, when Gaspar de Portolá and a small Spanish contingent began their exploratory journey along the California coast from San Diego to Monterey. This was followed in 1776 by the expedition of Father Francisco Garcés (Johnson and Earle, 1990). In the late 18th century, the Spanish began establishing missions in California and forcibly relocating and converting native peoples. In 1771, Father Junipero Serra founded the Mission San Juan Capistrano, located approximately 21 miles south of the APE (California Missions Resource Center, 2003). Disease and hard labor took a toll on the native population in California; by 1900, the Native Californian population had declined by as much as 90 percent (Cook, 1978). In addition, native economies were disrupted, trade routes were interrupted, and native ways of life were significantly altered.

In an effort to promote Spanish settlement of Alta California, Spain granted several large land concessions from 1784 to 1821. At this time, unless certain requirements were met, Spain retained title to the land (State Lands Commission, 1982).

## Mexican Era (1821-1846)

The Mexican Period began when Mexico won its independence from Spain in 1821. Mexico continued to promote settlement of California with the issuance of land grants. In 1833, Mexico began the process of secularizing the missions, reclaiming the majority of mission lands and redistributing them as land grants. According to the terms of the Secularization Law of 1833 and Regulations of 1834, at least a portion of the lands would be returned to the Native populations, but this did not always occur (Milliken et al., 2009).

Many ranchos continued to be used for cattle grazing by settlers during the Mexican Period. Hides and tallow from cattle became a major export for Californios, many of whom became wealthy and prominent members of society. The Californios led generally easy lives, leaving the hard work to vaqueros and Indian laborers (Pitt, 1994; Starr, 2007).

# American Era (1846 to present)

In 1846, the Mexican-American War broke out. Mexican forces were eventually defeated in 1847 and Mexico ceded California to the United States as part of the Treaty of Guadalupe

Hildalgo in 1848. California officially became one of the United States in 1850. While the treaty recognized right of Mexican citizens to retain ownership of land granted to them by Spanish or Mexican authorities, the claimant was required to prove their right to the land before a patent was given. The process was lengthy, and generally resulted in the claimant losing at least a portion of their land to attorney's fees and other costs associated with proving ownership (Starr, 2007).

When the discovery of gold in northern California was announced in 1848, a huge influx of people from other parts of North America flooded into California. The increased population provided an additional outlet for the Californios' cattle. As demand increased, the price of beef skyrocketed and Californios reaped the benefits. However, a devastating flood in 1861, followed by droughts in 1862 and 1864, led to a rapid decline of the cattle industry; over 70 percent of cattle perished during these droughts (McWilliams, 1946; Dinkelspiel, 2008). This event, coupled with the burden of proving ownership of their lands, caused many Californios to lose their lands during this period (McWilliams, 1946). Former ranchos were subsequently subdivided and sold for agriculture and residential settlement.

The first transcontinental railroad was completed in 1869, connecting San Francisco with the eastern United States. Newcomers poured into northern California. Southern California experienced a trickle-down effect, as many of these newcomers made their way south. The Southern Pacific Railroad extended this line from San Francisco to Los Angeles in 1876. The second transcontinental line, the Santa Fe, was completed in 1886 and caused a fare war, driving fares to an unprecedented low. Settlers flooded into the region and the demand for real estate skyrocketed. As real estate prices soared, land that had been farmed for decades outlived its agricultural value and was sold to become residential communities. The subdivision of the large ranchos took place during this time (Meyer, 1981; McWilliams, 1946).

## History of the APE and Vicinity

#### Peters Canyon Regional Park

The northern portion of the APE bounds areas of Peters Canyon Regional Park. The park was originally part of the 47,227-acre Rancho Lomas de Santiago land grant, granted to Teodosio Yorba by Governor Pio Pico in 1846. In 1897, Yorba sold the ranch to James Irvine, who leased Peters Canyon to several farmers. The canyon is named for one of these farmers, James Peters who grew barley and beans in the canyon's upper reaches (OC Parks, n.d.).

In 1898, James Irvine established the Irvine Company, which managed 110,000 acres of agricultural holdings in Orange County (James Irvine Foundation, n.d.). By 1910, the Irvine Company's holdings had the highest agricultural output in the state, producing the large quantities of beans and barley. By 1930, the company's holding produced a myriad of crops including beans, oranges, cauliflower, grapes, barley, and papayas. To provide water for his agricultural operations, Irvine built the Upper Peters Canyon Reservoir in 1931, and the lower reservoir in 1940 to conserve water from the canyon's watersheds and

supply it to the Irvine Company's agriculture operations in Peters Canyon, which included orange groves (OC Parks, n.d.). The Upper Peters Canyon Reservoir is located approximately 500 feet west of the APE's northern portion and the lower reservoir is currently a retarding basin located approximately 1,400 feet from the APE's central portion.

During World War II, the U.S Army established a training area known as Camp Commander in Peters Canyon near the lower reservoir (OC Parks, n.d.). Troops from Camp Commander engaged in mock battles with troops being trained at Camp Rathke, an army training camp that was located approximately 2 miles east of Peters Canyon.

In the 1940s and 1950s the Irvine Company changed its focus from agriculture to real estate development as post-war suburbs swept much of southern California. The company began developing large, planned communities on many of its previous agricultural lands (James Irvine Foundation, n.d.). In March 1992, the Irvine Company dedicated 340 acres of it lands in Peters Canyon to Orange County to be preserved the Peters Canyon Regional Park.

#### City of Tustin

The city of Tustin was founded in 1870 by Columbus Tustin and his partner, Nelson O. Stafford. The two men purchased 1300 acres of the former Rancho Santiago de Santa Ana in 1868. Streets were laid out, lots sold, and a post office authorized in 1872 (Gudde, 1998). Lot sales were slow, so Tustin instead gave away lots to those who wanted to build homes on them. Growth of Tustin was further slowed when Santa Ana was chosen as the southern terminus of the Southern Pacific Railroad instead of Tustin (Tustin Area Historical Society, 2009).

Tustin was primarily an agricultural community through the end of the 19th century, with walnut and apricot groves dotting the landscape. At the turn of the century, more profitable Valencia oranges supplanted the walnut and apricot groves (Tustin Area Historical Society, 2009).

In 1927, the population reached 900 and Tustin was incorporated. During World War II, the establishment of military bases at the Santa Ana Army Air Base, the El Toro Marine Corps Air Station, and the Santa Ana Naval Air Station (eventually MCAS Tustin) resulted in substantial development of the area (Tustin Area Historical Society, 2009). By the mid-1950s, post-war industries brought more people to Tustin and land values increased dramatically. The increasing land values induced many farmers to sell their orchards, and by 1970 Tustin's citrus groves were replaced by residential suburbs. Today, Tustin is a suburban community with a population of 79,348 as of 2019.

#### City of Orange

The City of Orange was originally founded in 1871 by Alfred Beck Chapman and Andrew Glasell, two Los Angeles attorneys. Chapman and Glasell owned 5,400 acres of land that encompassed was is presently the city of Orange and hired a surveyor to divide the land into 48, 80, and 120-acre tracts for sale (Ritchie, 2014). By 1872 roads were laid out and at least a dozen houses had been constructed. When the town first formed it was originally

named Richland; however, when town leaders applied for a postal office, the name Richland was already taken compelling the town to change its name. There are a number of stories as to why the city came to be called Orange. The most plausible story describes city leaders naming the town Orange in hopes of it becoming the county seat of the newly formed County of Orange (Ritchie, 2014). By 1888, the town encompassed 3.1 miles and had a population of 600 residents.

Orange started out as a farming community and had a canal, known as the A.B. Chapman canal, constructed between the Santa Ana River and the town site (COPL, n.d.). Initially, the crops grown growing included barley, corn, oats, rye, and wheat. Later, farmers began planting grape vines for raisins, which was the primary cash crop until 1886 when a blight spread amongst the community's vines killing many of them (COPL, n.d.).

In 1873, the town's farmers began planting orange groves and by the 1920s the area became up one of the county's centers for citrus production, producing more than \$12 million in oranges by 1929 (Ritchie, 2014). However, beginning in the 1930s with the onset of the Great Depression, citrus prices fell, which was exacerbated by a freeze in 1937 that wiped out many of the citrus trees and a flood in 1938 that damaged large swaths of farmland (COPL, n.d.).

During World War II, Orange was the home of the 30th Field Artillery Battalion (COPL, n.d.). After the war, many of the serviceman returned to the area to settle, setting of the largest period of growth in Orange County. Between 1950 and 1960, the city of Orange grew 3.8 square miles to 8.3 square miles and its population more than doubled from 10,027 to 26,444 (COPL, n.d.). Presently, the City of Orange is a large suburban community with a population of 138,000 as of 2005 and covering an area of 25 square miles. The city is home to a number of businesses and Chapman University, the oldest university in Orange County.

# **Geoarchaeological Review**

The following section analyzes the potential for subsurface archaeological resources to be present within the APE. Sources reviewed as part of this analysis include geologic maps, soil survey maps, historic topographic maps, and historic aerials photographs.

## Geology

The APE is located within Santiago Hills at the western flank of the Santa Ana Mountains, a northwest-southeast trending mountain range in the Peninsular Range Province. The mountains result from approximately 150 million years of subduction and another 30 million years of faulting (Lipps et al., 2017). Uplift to the east at the Elsinore fault resulted in a westward tilt to the range and creation of marine and terrestrial environments that tend to be fossiliferous (Morton and Miller, 2006).

The APE is underlain primarily by late Eocene to early Miocene undifferentiated Sespe Formation continental conglomerate and Vaqueros Formation marine sandstone. The Sespe Formation is characterized by varicolored sandstone and pebbly sandstone, red beds, and conglomeratic intervals (Morton and Miller, 2006). The overlying Vaqueros Formation in the Santa Ana Mountains is characterized by marine sandstone, pebbly sandstone, and clayey siltstone. Based on the extreme age and environment of formation of the Sespe and Vaqueros Formations, these geological units have a low sensitivity for deeply buried cultural resources. Cultural resources, if deposited in the past, would tend to have remained at the ground surface, subject to erosion, weathering, and other destructive processes. Cultural resources, if once present, are further likely to have been destroyed or removed by previous development including road and utility construction.

The northern terminus of the APE near the intersection of Jamboree Road and Canyon View Avenue is mapped as being underlain by Holocene and Pleistocene-aged alluvial fan deposits (Morton and Miller, 2006). This geological unit is characterized by unconsolidated to moderately consolidated silt, sand, pebbly cobbly sand, and bouldery alluvium. The alluvium was eroded out of mountains and hillslopes, and transported and deposited by fluvial processes. Based on the age and environment of formation of Holocene to late Pleistocene alluvial fan deposits, this geological unit has a higher sensitivity for intact, buried cultural resources.

#### Soils

Soils underlying the APE consist of a series that have formed within in situ weathered bedrock parent material (Alo clay [NRCS, 1997], Balcom clay loam [NRCS, 2001a], Calleguas clay [NRCS, 2001b], and Soper cobbly loam [NRCS, 2003]) and alluvium eroded from marine and non-marine bedrock (Mocho loam [NRCS, 2014], Capistrano sandy loam [NRCS, 2001c], and Sorrento loam [NRCS, 1999]). Depth to paralithic contact (bedrock residuum) in Alo, Balcom, and Soper soils is approximately 20-24 to 40 inches below ground surface, and for Calleguas soils a mere 8 to 20 inches. These residuum-derived soils are consistent with geological mapping that indicates these areas are underlain by Sespe and Vaqueros Formation bedrock, and are considered to have a low sensitivity for cultural resources.

Mapping of the alluvial Mocho series conforms with geological mapping of alluvial fan deposits near the intersection of Jamboree Road and Canyon View Avenue. Areas of Sorrento loam and Capistrano sandy loam – both alluvial soils – are spatially-limited, and reflect localized drainage ways that have been heavily modified and, thus, have a reduced sensitivity for cultural resources.

## Historic Topographic Maps

Historic topographic maps were accessed online via TopoView (USGS, 2019). Available topographic maps include the 1896 Anaheim 15-minute quadrangle, and the 1932, 1949, and 1964 Orange 7.5-minute quadrangles.

The 1896 and 1932 topographic maps show the APE as being located entirely within the Lomas de Santiago land grant, but no structures or other features are indicated in the APE's immediate vicinity. The 1949 and 1964 topographic maps show the Peters Canyon Reservoir located west of the APE. The 1949 map depicts an underground pipeline running

beneath the northern portion of the APE near the intersection of Jamboree Road and Canyon View Avenue. The north-south oriented pipeline corresponds to the present-day Peters Canyon Regional Trail and Bikeway. The 1964 topographic map depicts the southern terminus of an aqueduct near the APE's northern edge near the intersection of Jamboree Road and Canyon View Avenue.

### Historic Aerial Photographs

Historic aerials and photographs were briefly reviewed to assess previous disturbances that might have occurred in the APE (Historicaeirals.com 2020). Historic aerial photographs were available for the years 1946, 1952, 1963, 1972, 1980, 1994, 2002, and 2014. The 1946 and 1952 photographs show very little development within the APE's vicinity aside from the presence of Peters Canyon Reservoir located west of the APE's norther portion and orchards depicted in the vicinity of the APE's southern portion. The 1963 photograph shows what appears to be a generally north-south earthen alignment extending from Santiago Wash within what is presently Irvine Regional Park, approximately 1 mile north of the APE, to Rattlesnake Reservoir located approximately 3 miles southeast of the APE. The earthen alignment likely represents the installation of the V.P. Baker Pipeline in 1962 and is shown immediately east of Peters Canyon Reservoir along the western margin of the APE segment located along Jamboree Road. The 1972 and 1980 photographs show suburban development just west of the APE and the 1994 photograph show Jamboree Road and Pioneer Road have been constructed with engineered slopes along both the eastern and western margins of Jamboree Road. The 1980 aerial photograph shows construction of two buildings immediately east of Staging Area #1. The 2002 and 2014 photographs show the development of suburban neighborhoods along both sides of Pioneer Road and on the western side of Jamboree Road near its intersection with Pioneer Road.

### Archaeological Sensitivity

Based on geological, soils, and archaeological data, the APE is considered to have a low sensitivity for intact, buried and surface cultural resources. Much of the APE is mapped as containing geologic units that are too old to be conducive to the preservation of archaeological deposits. The one exception is the portion of the APE located near the intersection of Jamboree Road and Canyon View Avenue, which is mapped as containing Holocene to late Pleistocene alluvial fan deposits. These deposits are of appropriate age to contain subsurface archaeological deposits; however, this area has been subject to numerous disturbances associated with the construction of the V.P. Baker Pipeline in the early 1960s and the construction of Jamboree Road. These disturbances would have destroyed any surface or subsurface archaeological resources that may have been present in this portion of the APE.

# Field Methods

On August 13 and October 11, 2020, ESA archaeologists, Matthew Gonzalez, B.A., and Kyle Garcia, M.A., conducted archaeological resources surveys of the APE, respectively, to identify archaeological resources that could be impacted by project-related ground-

disturbing activities. Mr. Gonzalez and Mr. Garcia both meet Caltrans' PQS as Lead Archaeological Surveyor. Given the developed nature of the APE numerous survey strategies were employed including reconnaissance (windshield) survey of paved areas, and mixed systematic and opportunistic survey in areas where ground surface was visible. Areas subject to systematic survey were surveyed using transects spaced at intervals no greater than 15 meters (approximately 50 feet).

Much of the APE is comprised of developed, gravel based, paved, and otherwise landscaped areas with no visible undisturbed ground surface. These areas were subject to reconnaissance-level survey. The northern half of the APE along Jamboree Road includes public pedestrian and horse trails south of Canyon View Road. This area was subject to opportunistic and systematic survey. No evidence of cultural resources were identified as a result of the survey. A survey coverage map is provided in **Appendix A**, Maps, of this report.

# Study Findings and Conclusions

No cultural resources were identified in the APE as a result of the archival research or the field survey. The SLF search did not identify the presence of Native American cultural resources within the APE. Similarly, no Native American cultural resources have been identified as part of the Native American consultation conducted to date. The geoarchaeological review indicates the APE has low sensitivity for the presence of subsurface archaeological deposits. Therefore, the likelihood of encountering intact subsurface archaeological deposits during project construction is low.

Given that no cultural resources were identified as a result of archival research and field investigation, and the likelihood for encountering intact subsurface archaeological deposits is low, this study concludes that no cultural resources qualifying as historic properties pursuant to Section 106 of the NHPA will be adversely affected by implementation of the proposed project; a finding of **No Historic Properties Affected** is recommended for this undertaking. If previously unidentified archaeological 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 proposed project limits are extended beyond the present survey limits.

# **References Cited**

- Bean, L.J., and C.R. Smith. 1978. Gabrielino, in *California*, edited by R.F. Heizer, pp. 538-549 Handbook of North American Indians, Vol. 8, W. C. Sturtevant, general editor, Smithsonian Institution, Washington, D.C.
- California Missions Resource Center. 2003. San Gabriel Arcángel The Fourth of the California Missions. Electronic document, http://www.missionscalifornia.com/keyfacts/san-gabriel-arcangel.html, accessed November 4, 2014.
- City of Orange Public Library (COPL). n.d. History of Orange. Electronic resource, https://www.cityoforange.org/411/History-of-Orange, accessed June 18, 2020.
- Cleland, J.H., A.L. York, and L.M. Willey. 2007. *Piecing Together the Prehistory of Landing Hill: A Place Remembered*, EDAW Cultural Publications No. 3, San Diego, CA.
- Cook, Sherburne F. 1978. Historical Demography. In *California*, edited by Robert F. Heizer, pp. 91–98, Handbook of North American Indians, Vol. 8, W. C. Sturtevant, general editor, Smithsonian Institution, Washington, D.C.
- Dinkelspiel, Frances. 2008. Towers of Gold, St. Martin's Press, New York.
- Gudde, Erwin G. 1998. *California Place Names: The Origin and Etymology of Current Geographical Names.* Berkeley: University of California Press.
- Hoover, M. B., H. E. Rensch, E. G. Rensch, W. N. Abeloe. 2002 *Historic Spots in California*. Revised by Douglas E. Kyle. Palo Alto, CA: Stanford University Press.
- James Irvine Foundation. n.d. History of Irvine. Electronic resource, https://www.irvine.org/about/history, accessed June 18, 2020.
- Johnson, John R., and David D. Earle. 1990. Tataviam Geography and Ethnohistory. Journal of California and Great Basin Anthropology 12(2):191-214.
- Kroeber, A.L. 1925. *Handbook of the Indians of California*. Smithsonian Institution, Washington, D.C.
- Lipps, J.H. R. Lozinsky, J. Pederseb-Guzman, E. Scott, and L. Babilonia. 2017. "Geology, stratigraphy, and paleontology of the Santa Ana Mountains, California, USA." In *Field Excursions in Southern California: Field Guides to the 2016 GSA Cordilleran Section Meeting*, edited by B. Kratz, J.S. Lackey, and J.E. Fryxell, pp. 31-48. Geological Society of America, Boulder, Colorado.
- Los Angeles Public Library. 1938. *Kirkman-Harriman Pictorial and Historical Map of* Los Angeles County 1860-1937. Electronic resource,

Peters Canyon Bikeway Extension Project

https://www.lapl.org/collections-resources/visual-collections/kirkman-harrimanpictorial-and-historical-map-los-angeles, accessed March 20, 2019.

- McCawley, William. 1996. *The First Angelinos: The Gabrielino Indians of Los Angeles*, Malki Museum Press, Banning, California.
- McWilliams, Carey. 1946. Southern California: An Island on the Land, Gibbs Smith, Layton, Utah.
- Meyer, L. 1981. Los Angeles, 1781-1981: A Special Bicentennial Issue of California History, Spring 1981, California Historical Society, Los Angeles.
- Michael Baker International (MBI). 2016. Peters Canyon Regional Park (PECA) Resource Management Plan County of Orange, California – Draft Biological Resources Report. Prepared for Orange County Parks and Recreation by Michael Baker International.
- Miller, D.M., and F.K. Miller. 2006. Geologic Map of the Geologic map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California. Open-File Report OF-2006-1217. US Geological Survey.
- Milliken, Randall, Laurence H. Shoup, and Beverly R. Ortiz. 2009. *Ohlone/Costanoan Indians of the San Francisco Peninsula and their Neighbors, Yesterday and Today*, prepared by Archaeological and Historical Consultants, Oakland, California, prepared for National Park Service Golden Gate National Recreation Area, San Francisco, California.
- Morton, D.M., and F.K. Miller. 2006. Geologic Map of the Geologic map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California. Open-File Report OF-2006-1217. US Geological Survey.

Natural Resources Conservation Service (NRCS). 1997. Alo Series. Electronic resource, https://soilseries.sc.egov.usda.gov/OSD\_Docs/A/ALO.html, accessed August 12, 2020.

- ——. 1999. Sorrento Series. Electronic resource, https://soilseries.sc.egov.usda.gov/OSD\_Docs/S/SORRENTO.html, accessed August 12, 2020.
- ——. 2001a. Balcom Series. Electronic resource, https://soilseries.sc.egov.usda.gov/OSD\_Docs/B/BALCOM.html, accessed August 12, 2020.
- ——. 2001b. Calleguas Series. Electronic resource, https://soilseries.sc.egov.usda.gov/OSD\_Docs/C/CALLEGUAS.html, accessed August 12, 2020.
- ——. 2001c. Capistrano Series. Electronic resource, https://soilseries.sc.egov.usda.gov/OSD\_Docs/C/CAPISTRANO.html, accessed August 12, 2020.

- ——. 2003. Soper Series. Electronic resource, https://soilseries.sc.egov.usda.gov/OSD\_Docs/S/SOPER.html, accessed August 12, 2020.
- ——. 2014. Mocho Series. Electronic resource, https://soilseries.sc.egov.usda.gov/OSD\_Docs/M/MOCHO.html, accessed August 12, 2020.
- ——. 2020. Web Soil Survey. Electronic resource, http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx, accessed August 12, 2020.
- OC Parks. n.d. Peters Canyon Regional Park History. Electronic resource, https://www.ocparks.com/parks/peters/history, accessed June 18, 2020.
- Pitt, Leonard. 1994. The Decline of the Californios: A Social History of the Spanishspeaking Californians, 1846-1890. University of California Press, Berkeley.
- Ritchie, Erika I. 2014. Throwback Thursday: How Orange Got Its Name. Electronic resource, https://www.ocregister.com/2014/08/21/throwback-thursday-how-orange-got-its-name-is-a-juicy-tale/, accessed June 18, 2020.
- Starr, Kevin. 2007. California: A History, Modern Library, New York.
- State Lands Commission. 1982. Grants of Land in California Made by Spanish or Mexican Authorities. Electronic document, www.slc.ca.gov/reports/grants\_of\_land/part\_1.pdf, accessed February 8, 2012.
- Tustin Area Historical Society (TAHS), 2009 *Tustin History*. Electronic document, http://www.tustinhistory.com/tustin-history.htm, accessed November 24, 2009.
- Vellanoweth, R.L. and J.H. Altschul. 2002. Antiquarians, Culture Historians, and Scientists: The Archaeology of the Bight, in *Islanders and Mainlanders: Prehistoric Context for the Southern California Bight*, edited by J.H. Altschul and D.G. Grenda, pp. 85-111, SRI Press, Tucson.
- Wallace, William J. 1955. A Suggested Chronology for Southern California Coastal Archaeology. Southwestern Journal of Anthropology 11:214-230.
- Warren, Claude N. 1968. Cultural Tradition and Ecological Adaptation on the Southern California Coast. In Archaic Prehistory in the Western United States, C. Irwin-Williams, ed, pp. 1-4. *Eastern New Mexico University* Contributions *in Anthropology*. Portales.

#### Peters Canyon Bikeway Extension Project

This page intentionally left blank

# APPENDIX A

Maps

Project: Peters Canyon Bikeway Extension District: 12 County: Orange Federal Project Number: CML-5955(115)

C

В

D





SOURCE: OCPW, 2020

Peters Canyon Bikeway ExtensionProject

Survey Coverage Overview Sheet

ESA





Peters Canyon Bikeway ExtensionProject

Survey Coverage Sheet A

ESA 



Peters Canyon Bikeway ExtensionProject

Survey Coverage Sheet B





Peters Canyon Bikeway ExtensionProject

Survey Coverage Sheet C

ESA



Peters Canyon Bikeway ExtensionProject

Survey Coverage Sheet D

ESA 



Peters Canyon Bikeway ExtensionProject

Survey Coverage Sheet E



# APPENDIX B Records Search Result

#### **South Central Coastal Information Center**

California State University, Fullerton Department of Anthropology MH-426 800 North State College Boulevard Fullerton, CA 92834-6846 657.278.5395 / FAX 657.278.5542 <u>sccic@fullerton.edu</u>

California Historical Resources Information System Orange, Los Angeles, and Ventura Counties

#### 7/23/2020

Records Search File No.: 21440.7569

Michael Vader Environmental Science Associates 550 West C Street, Suite 750 San Diego, CA 92101

Re: Records Search Results for the Peters Canyon Bikeway Extension Project (D201700595.08)

The South Central Coastal Information Center received your records search request for the project area referenced above, located on the Tustin, Orange, Black Star Canyon, and El Toro USGS 7.5' quadrangles. Due to the COVID-19 emergency, we have temporarily implemented new records search protocols. With the exception of some reports that have not yet been scanned, we are operationally digital for Los Angeles, Orange, and Ventura Counties. See attached document for your reference on what data is available in this format. The following reflects the results of the records search for the project area and a 1-mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: 

custom GIS maps 

shape files 
hand drawn maps

Resources within project area: 0	None
Resources within 1-mile radius: 35	SEE ATTACHED LIST
Reports within project area: 12	SEE ATTACHED LIST
Reports within 1-mile radius: 77	OR-00274, OR-00305, OR-00494, OR-00622, OR-00752,
	OR-00983, OR-01040, OR-01099, OR-01127, OR-01367,
	OR-02225, OR-02534

Resource Database Printout (list):	$\Box$ enclosed	oxtimes not requested	$\Box$ nothing listed
Resource Database Printout (details):	$\Box$ enclosed	oxtimes not requested	$\Box$ nothing listed
Resource Digital Database (spreadsheet):	$\boxtimes$ enclosed	$\Box$ not requested	$\Box$ nothing listed
Report Database Printout (list):	$\Box$ enclosed	oxtimes not requested	$\Box$ nothing listed
Report Database Printout (details):	$\Box$ enclosed	$oxed{\boxtimes}$ not requested	$\Box$ nothing listed
Report Digital Database (spreadsheet):	$\boxtimes$ enclosed	$\Box$ not requested	$\Box$ nothing listed
Resource Record Copies:	$\boxtimes$ enclosed	$\Box$ not requested	$\Box$ nothing listed
Report Copies:	$\boxtimes enclosed$	$\square$ not requested	$\square$ nothing listed

<b>OHP Built Environment Resources Directory (B</b>	🖾 available online; please go to		
https://ohp.parks.ca.gov/?page_id=30338			
Archaeo Determinations of Eligibility 2012:	$\boxtimes$ enclosed	$\Box$ not requested	$\Box$ nothing listed
Historical Maps:	$\Box$ enclosed	oxtimes not requested	$\Box$ nothing listed
Ethnographic Information:	🛛 not availa	ble at SCCIC	
Historical Literature:	🛛 not availa	ble at SCCIC	
GLO and/or Rancho Plat Maps:	🛛 not availa	ble at SCCIC	
Caltrans Bridge Survey:	🛛 not availa	ble at SCCIC; please	e go to
http://www.dot.ca.gov/hq/structur/strmaint/h	<u>istoric.htm</u>		
Shipwreck Inventory:	🛛 not availa	ble at SCCIC; please	e go to
http://shipwrecks.slc.ca.gov/ShipwrecksDatabas	e/Shipwrecks	Database.asp	
Soil Survey Maps: (see below)	🛛 not availa	ble at SCCIC; please	e go to
http://websoilsurvey.nrcs.usda.gov/app/WebSoi	Survey.aspx		

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System,

Digitally signed by Michelle Galaz Date: 2020.07.23 14:09:32 -07'00'

Michelle Galaz Assistant Coordinator



TOPO QUADS: Orange, Tustin, and Black Star Canyon, CA 7.5-minute

Peters Canyon Bikeway Extension Project

Figure 1 Records Search Map





TOPO QUADS: Orange, Tustin, and Black Star Canyon, CA 7.5-minute

Peters Canyon Bikeway Extension Project

Figure 1 Records Search Map - Previous Studies 1 of XX

ESA





TOPO QUADS: Orange, Tustin, and Black Star Canyon, CA 7.5-minute

Peters Canyon Bikeway Extension Project

Figure 1 Records Search Map - Previous Studies 2 of XX

ESA


Peters Canyon Bikeway Extension Project

**Figure 1** Records Search Map - Previous Studies 3 of XX



Peters Canyon Bikeway Extension Project

Figure 1 Records Search Map - Previous Studies 4 of XX



Peters Canyon Bikeway Extension Project

Figure 1 Records Search Map - Previous Studies 5 of XX



Peters Canyon Bikeway Extension Project

Figure 1 Records Search Map - Previous Studies 6 of XX



Peters Canyon Bikeway Extension Project

**Figure 1** Records Search Map - Previous Studies 7 of 7

ESA 

# Appendix D Preliminary Foundation Report





# PRELIMINARY FOUNDATION REPORT PETERS CANYON BIKEWAY EXTENSION AND RETAINING WALL CITIES OF ORANGE AND TUSTIN, ORANGE COUNTY, CA

Submitted to

# **Orange County Public Works**

Prepared for

ESA 626 Wilshire Boulevard, Suite 1100 Los Angeles, CA 90017

Prepared by

#### **GROUP DELTA CONSULTANTS, INC.**

32 Mauchly, Suite B Irvine, California 92618

GDC Project No. IR742 October 13, 2020



ESA 626 Wilshire Boulevard, Suite 1100 Los Angeles, CA 90017

Attention: Ryan Todaro Project Manager, Community Development

SUBJECT: Preliminary Foundation Report Peters Canyon Bikeway Extension and Retaining Wall Cities of Orange and Tustin, Orange County, CA

Dear Ryan:

Group Delta is pleased to submit our Preliminary Foundation Report (PFR) for the subject bikeway extension and associated retaining wall structure in accordance with our proposal dated May 15, 2020. Please feel free to contact us if you have questions or comments.

Sincerely, GROUP DELTA CONSULTANTS, INC.

Curt Scheyhing

Curt Scheyhing, PE, GE Principal Geotechnical Engineer



Mathur Gimen



Michael J. Givens, PhD, PE, GE, PG Associate Geotechnical Engineer



Distribution: Addressee

(PDF file to Parsons)

32 Mauchly, Suite B, Irvine, CA 92618 TEL: (949) 450-2100 Anaheim – Irvine – Ontario – San Diego – Torrance www.GroupDelta.com October 13, 2020 Project No. IR742

# **TABLE OF CONTENTS**

1.0	INTRODUCTION					
	1.1	Purpose and Scope of Work1				
	1.2	Project Description1				
	1.3	Pertinent Reports and Investigations2				
	1.4	Project Datum2				
	1.5	Exceptions to Policies and Procedures2				
2.0	FIELD I	NVESTIGATION AND LABORATORY TESTING				
	2.1	Site Reconnaissance				
	2.2	Drilling and Soil Sampling				
	2.3	Laboratory Testing Program4				
3.0	SITE G	EOLOGY AND SUBSURFACE CONDITIONS				
	3.1	Site Conditions				
	3.2	Geology5				
	3.3	Subsurface Soil and Bedrock Condition6				
	3.4	Expansive Soils				
	3.5	Surface Water and Groundwater6				
		3.5.1 Surface Water 6   3.5.2 Groundwater 7				
4.0	AS BU	LT FOUNDATION DATA7				
5.0	SCOUF	EVALUATION				
6.0	CORRO	OSION EVALUATION				
7.0	PRELIN	/INARY SEISMIC INFORMATION AND RECOMMENDATIONS				
	7.1	Ground Surface Rupture				
	7.2	Acceleration Response Spectrum (ARS)8				
	7.3	Liquefaction and Seismic Settlement8				
	7.4	Global Stability9				
8.0	PRELIN	/INARY FOUNDATION RECOMMENDATIONS				
	8.1	ERS Type Selection				
	8.2	Lateral Earth Pressures				
	8.3	Lateral Resistance				
	8.4	Bearing Capacity				



11.0			12
11 0			12
10.0	REFER	ENCES	12
9.0	CONST	RUCTION CONSIDERATIONS	11
	8.7	Subgrade Preparation	11
	8.6	Wall Drainage	11
	8.5	Settlement	11

#### LIST OF TABLES

Table 1	Summary of Wall Structure (30% Design)
Table 2	Summary of Subsurface Conditions for Proposed Walls

#### LIST OF FIGURES

Figure 1A	Site Vicinity Map	
0		

- Figure 1B Site Location and Alignment Map
- Figure 2 Proposed Retaining Wall Typical Sections
- Figure 3 Exploration Location Map
- Figure 4 Regional Geologic Map
- Figure 5 Fault Location Map

#### LIST OF APPENDICES

- Appendix A Field Investigation
- Appendix B Laboratory Testing
- Appendix C Existing Information
- Appendix D Site Reconnaissance Photographs
- Appendix E Calculations



# PRELIMINARY FOUNDATION REPORT PETERS CANYON BIKEWAY EXTENSION AND RETAINING WALL CITIES OF ORANGE AND TUSTIN, ORANGE COUNTY, CA

### 1.0 INTRODUCTION

#### 1.1 Purpose and Scope of Work

The purpose of this Preliminary Foundation Report (PFR) is to provide preliminary geotechnical recommendations for the proposed Peters Canyon Bikeway extension along Jamboree Road and Pioneer Road in the cities of Orange and Tustin in Orange County, California (Figures 1A and 1B). The PFR provides preliminary geotechnical input for advance planning studies for the proposed retaining wall along Jamboree Road.

Our scope of work included the following tasks:

- Surficial site reconnaissance and review of aerial photographs;
- Review of existing seismic, geologic and geotechnical information;
- Perform geotechnical investigation to evaluate subsurface conditions along the proposed retaining wall and produce boring logs (Appendix A);
- Perform a laboratory testing program (Appendix B);
- Preliminary engineering evaluations; and
- Preparation of this report.

This PFR was prepared in general accordance with Caltrans "Foundation Reports for Earth Retaining Systems" (Caltrans, 2017). It provides an overview of the existing conditions, site geology, seismicity, recommendations regarding suitable Earth Retaining System (ERS) types, and preliminary geotechnical design recommendations. It also presents field and laboratory work to support a Foundation Report (FR).

# **1.2 Project Description**

The project will include construction of approximately 2.7 miles of combined Class I bike path and striped buffered Class II bike lane along the recommended alignment (Figure 1B). The proposed off-street paved Class I bike path starts on the west side of Jamboree Road from Canyon View Ave to Pioneer Road then continues along both sides of Pioneer Road from Jamboree Road to Pioneer Way with a buffered Class II bike lane on both sides. Improvements along Pioneer Road are limited to restriping and using existing facilities. An approximately 0.5 mile stretch along Jamboree Road will require cut into an existing slope and construction of a retaining wall along the west side of Jamboree Road to facilitate space for the proposed bike path as summarized in Table 1. The retaining wall is anticipated to be approximately 3 to 5 feet tall based on the 30 percent design plans (provided in Appendix C) and typical sections are shown in Figure 2.



Wall Length (ft)	Beginning of Wall "J" Station	End of Wall "J" Station	Beginning Wall Height (ft)	End Wall Height (ft)	Maximum Wall Height (ft)
3,430	105+22.81	139+55.09	5	5	5

#### Table 1. Summary of Wall Structure (30% Design)

Our geotechnical investigation and recommendations focused on the retaining wall area as the remainder of the alignments are expected to utilize the existing grade for the improvements.

#### **1.3** Pertinent Reports and Investigations

Geotechnical data and reports pertinent to this preliminary foundation report are listed as follows:

- GeoSoils, Inc. (1989). Pavement Design Report Portion of Jamboree Road Station 309+80.47 through Station 395+00 Jamboree Road Extension, City of Orange, California for City of Tustin. July 28.
- Hunsaker & Associates (1987). Rough Grading Plan Jamboree Road for City of Orange Office of the City Engineer. November 19.
- Leighton and Associates, Inc. (1997). Revised Final Foundation Report Handy Creek Road Undercrossing Bridge No. 55-798. June 27.
- Pacific Soils Engineering, Inc. (1987). Preliminary Grading Plan Review Proposed Jamboree Road, City of Orange, California, S.P. 2821. December 29.

A complete list of references is provided at the end of this report. Select sheets from the reports and plans have been included in Appendix C.

#### 1.4 Project Datum

The project will be based on the North American Vertical Datum of 1988 (NAVD88). Elevations from existing rough grading plans for Jamboree Road were assumed to be based on National Geodetic Vertical Datum, 1929 (NGVD29. The horizontal datum is North American Datum (NAD) 1983 California State Plane Coordinate System Zone VI.

#### **1.5** Exceptions to Policies and Procedures

No exceptions to policy or procedures are proposed.



#### 2.0 FIELD INVESTIGATION AND LABORATORY TESTING

#### 2.1 Site Reconnaissance

A site reconnaissance was performed on June 16, and July 1, 2020 to observe the condition of the site and existing structures. The reconnaissance included visual observation and photograph documentation. Selected site reconnaissance photographs are provided in Appendix D, and additional photos are in our files and available for review upon request.

An existing retaining wall and Metropolitan Water District (MWD) buildings were located at the southwest corner of Jamboree Road and Peters Canyon Road. The retaining wall was an approximate 320 feet long concrete block wall with a maximum height of 8 feet retaining an approximate 25-foot-tall 2H:1V (horizontal:vertical) slope. Rough grading plans including design details of the wall are provided in Appendix C. The existing retaining wall had observable water staining and seepage along with a dense growth of Phreatophytes behind the wall. During our site visit, a temporary flow of water was observed from a valve at the northwest corner of one of the MWD buildings. The flow direction was marked by noticeable erosion gullies from the MWD valve that were aligned north towards the slope leading down slope to Peters Canyon Road and Jamboree Road.

#### 2.2 Drilling and Soil Sampling

Prior to beginning the field investigation, encroachment permits were obtained from the Cities of Tustin and Orange and locations within Peters Canyon Regional Park were coordinated with Orange County Parks. Underground Service Alert (USA) was notified at each exploration location to check subsurface utilities.

The field exploration program was performed on July 21 to 23, 2020 and consisted of drilling three (3) 6-inch-diameter solid auger borings with a limited access tripod rig along the proposed retaining wall layout line. The locations of these explorations area shown in Figure 3. Additional explorations were planned up slope from the proposed retaining wall that were abandoned due to potential impacts to the Park's vegetation and access safety concerns with equipment.

Bulk samples and relatively undisturbed drive samples of representative soil layers were obtained during drilling at appropriate 5-foot intervals. Blow counts were recorded for both standard penetration test (SPT-N value) and California Modified Samplers. Upon withdrawal from borings, the samples were cleaned, the material was classified visually, and the information was entered on a field boring log by the field geologist. Visual descriptions and classifications of samples was performed in accordance with ASTM D2488 procedures. Samples were sealed to prevent moisture loss, packed in appropriate protective containers, and transported to the laboratory for further evaluation. Soil samples were handled and transported to our laboratory in accordance with ASTM D4220 guidelines. Completed borings were backfilled and tamped with soil cuttings.



The locations of our field exploratory borings are shown on Figure 3. Details of the exploration program and the boring logs are presented in Appendix A.

#### 2.3 Laboratory Testing Program

Laboratory testing on samples of the soils obtained from the borings were performed in accordance with ASTM and/or Caltrans specifications for laboratory testing. The laboratory testing program consisted of the following:

- In-situ Moisture Content and Dry Density;
- Grain Size Analysis;
- Atterberg Limits;
- Direct Shear;
- Expansion Index;
- Soil Corrosivity.

The performed tests are identified on the boring logs in Appendix A and a brief description of the laboratory test results are presented in Appendix B.

#### 3.0 SITE GEOLOGY AND SUBSURFACE CONDITIONS

#### 3.1 Site Conditions

The existing roadway grades along the proposed bikeway extension route generally decreases in elevation from north to south and has been developed through a series of cuts and fills in a hilly terrain. Based on review of the topographic mapping for the project the roadway grade along Jamboree Road at Canyon View Ave is at about El. 554 ft that is relatively flat to the south for approximately 350 feet and then ascends at an approximate 2 to 3 percent gradient to a maximum El. 606 ft before descending at a 2 to 3 percent gradient to Pioneer Road at El. 492 ft.

A retaining wall is proposed along the western side of Jamboree Road to facilitate space for the bikeway that will require cuts into native soft rock and man-made fill. The alignment traverses existing cuts and fills along Jamboree Road. The areas of cut and fill are apparent based on the topographic relief along the edges of Jamboree Road improvements with cut identified by the presence of ascending 2H:1V or flatter slopes on either side of the road, whereas fill was placed to raise grade for Jamboree Road and is bounded by a large descending slope into Peters Canyon Regional Park. The man-made slope descending into Peters Canyon Regional Park has several rows of terrace drains. Two cut slopes are located along the proposed wall alignment with an approximate 100-foot-tall hill at the south near the residential tract off Pioneer Road, referenced by OC Park Rangers as Big Red and the other being a 25-foot-tall slope near the MWD facility. The two cut slopes along Jamboree Road are separated by an approximately 1,180-feet-long, 15-feet-tall, earth berm that has been constructed over a large quantity of fill that is up to 100 feet deep.

N:\Projects\ AV\/700\IR742 ESA - Peters Canyon Bikeway Extension\07\_Reports\/R742\_ESA\_Peters Canyon Bikeway Extension\_PFR\_Final.docx



An existing retaining wall along Jamboree Road is located from approximately "J" Line Station 139+55 to 142+82. Seepage and water staining on the existing retaining wall and dense vegetation growth was observed between approximately "J" Line Station 141+50 to the end of the existing wall.

#### 3.2 Geology

The site is located within the Peninsular Ranges Geomorphic Province of Southern California in the northwestern portion of the Santa Ana Mountains. The Peninsular Ranges is characterized by northwest-trending topographic and structural features, such as the Santa Ana Mountains. The proposed location of the bikeway extension along Jamboree Road alternates through cut of soft rock formational materials and compacted embankment fill.

A Regional Geologic Map of the area showing natural geologic units at the ground surface is shown in Figure 4 (with local mapping prepared by others reproduced in Appendix C). Local geological mapping of the area was performed by Pacific Soils (1987) to support the design of the Jamboree Road Improvements and by Leighton and Associates (1997) for the SR-261 Improvements. The Pacific Soils maps (page C-18 thorough C-24) provide details along Jamboree Road from approximately Canyon View Avenue in the north to the boundary of the Cities of Tustin and Orange in the south. Leighton and Associates maps (page C-25 through C-30) provided details east of Jamboree Road from approximately Pioneer Road in the south to Handy Creek Road in the north. The maps have been reproduced in Appendix C with annotations of relevant features for reference.

The mapped units from oldest to youngest identified along the bikeway route are Vaqueros and Sespe undifferentiated (Tvs), Topanga (Tt), young alluvial deposits (Qyf and Qya), man-made artificial fill (Qaf). The site is predominantly mapped as thick beds of sandstone, conglomerates and claystone of the early Tertiary Vaqueros and Sespe undifferentiated (Tvs) formation. Local mapping in Appendix C identifies inactive fault contacts between Tvs and sandstone material assigned to the mid-Eocene Topanga (Tt) formation that is located near the MWD facilities. Figure 4 mapped Holocene young alluvial fan deposits (Qyf) and Appendix C mapped Holocene young alluvial deposits (Qya) downstream of the Peters Canyon reservoir where portions traversing Jamboree Road have since been constructed over with up to 100 feet thick man-made engineered artificial fills (Qaf) not mapped but depicted in cross sections in page C-23. Qaf has been mapped in Figure 4 at the Peters Canyon dam.

The geological structure identified in Appendix C mapping indicates that the Tvs formation is generally dipping between 20 and 40 degrees to the northeast. During our field investigation the slopes along the proposed bikeway extension were covered by vegetation and residual soils with no defined bedding was observed.



#### 3.3 Subsurface Soil and Bedrock Condition

The subsurface profile along the proposed retaining wall alignment will generally consist of engineered artificial fill (Qaf) and poorly-indurated sandstone and claystone of the Vaqueros and Sespe undifferentiated (Tvs) formation. Geotechnical analyses for the proposed structure has been based on site-specific data and review of existing data (in Appendix C, referenced in Section 1.3). Table 2 provides a summary of subsurface conditions assumed along the retaining wall and the engineering properties used for design.

Wall Location ("J" Line Station) <sup>(1)</sup>	Mapped Geologic Unit <sup>(2)</sup>	Total Unit Weight γ (pcf)	Internal Frication Angle ¢ (deg)	Cohesion c (psf)
105+22 to 112+00	Tvs	125	39 <sup>(3)</sup>	400 <sup>(3)</sup>
112+00 to 129+00	Qaf	120	34	200
129+00 to 139+55	Tvs	125	39 <sup>(3)</sup>	400 <sup>(3)</sup>

#### Table 2. Summary of Subsurface Conditions for Proposed Walls

Notes:

1) Stations approximated based on 30% design plans in Appendix C.

2) Tvs = Vaqueros and Sespe undifferentiated, Qaf = Engineered artificial fill

3) Weak bedding plane with  $\phi$  = 22 degrees and c = 150 psf oriented at an approximate dip of 30 degrees was considered in global stability analyses as discussed in Section 7.4.

#### 3.4 Expansive Soils

Expansion index testing was performed on one soil sample collected in the recent investigation. The test was performed on a bulk sample of the upper 5 feet from boring B-1 and had an expansion index of 11, which indicates a very low expansion potential. Based on the Atterberg limit testing performed for the proposed project, the soils tested had liquid limits between 34 to 57 and plasticity index between 20 to 32. Moderately expansive soils are present at the site and the foundation should be designed to resist these expansion pressures through proper subgrade preparation as discussed in Section 8.7.

# 3.5 Surface Water and Groundwater

# 3.5.1 Surface Water

No surface water bodies are located at the proposed improvements. However, Peters Canyon Reservoir is located approximately 500 feet west of the proposed wall at the intersection of Jamboree Road and Handy Creek Road. The reservoir has a dam at the southern side that leads to the Peter Canyon Wash that is a natural drainage to the south and southeast consistent with the Qyf deposits shown in Figure 4. A portion of the wash has been infilled with artificial fill to



develop the current grades of Jamboree Road. In the developed areas surrounding the site surface water is in the form of sheet flow to storm drains and channels.

### 3.5.2 Groundwater

Groundwater was not encountered during our recent field investigation. Historically the highest groundwater in the area has been mapped at 10 feet below ground surface and is limited to the Peters Canyon wash area that also corresponds to the young alluvial deposits mapped in Figure 4 and Appendix C. Local perched groundwater was not observed during drilling and could be present in areas of fill over native claystone bedrock. Shallow groundwater areas are not anticipated in areas of the proposed improvements. Seepage was observed near the MWD facility and may be present during construction.

# 4.0 AS BUILT FOUNDATION DATA

There is an existing retaining wall and MWD buildings located at the southwest corner of Peters Canyon Road and Jamboree Road. No as-built foundation data was available for review for the structures. However, the reference material in Section 1.3 was reviewed that included a rough grading plan for the existing retaining wall. The retaining wall consists of an approximately 320-foot-long block gravity wall that is similar to a Caltrans Type 6A (case 2) retaining wall with design heights of 6 and 8 feet. Subdrains were planned to be 4-inch perforated PVC pipe with 1-inch PVC outlet pipe at 10-feet maximum spacing placed with 1 cubic foot per linear foot of gravel around the pipe. The soils parameters utilized for design of the existing wall was an allowable soil bearing pressure of 2.5 ksf, coefficient of sliding of 0.3, an active fluid pressure for a 45 pcf considering a 2H:1V sloped condition and a passive fluid pressure of 300 pcf.

# 5.0 SCOUR EVALUATION

The proposed improvements will be located along paved areas, and runoff is by sheet flow to storm drains that carry the flow offsite. The proposed improvements are not located within or adjacent to flood/drainage or concentrated flowing surface water bodies. Based on the above considerations, we do not consider scour to be a design concern for the wall.

#### 6.0 CORROSION EVALUATION

Caltrans (2018a) considers a site to be corrosive if one or more of the following conditions exist:

- Chloride concentration greater than or equal to 500 ppm;
- Sulfate concentration greater than or equal to 1,500 ppm; or
- pH of 5.5, or less.

Corrosion testing has been performed on one (1) sample from boring B-3 drilled in the vicinity of the proposed retaining wall. The soil corrosion test results indicate an environment that is not considered corrosive according to Caltrans (2018a)



N:\Projects\\_AV\/700\/R742 ESA - Peters Canyon Bikeway Extension\07\_Reports\/R742\_ESA\_Peters Canyon Bikeway Extension\_PFR\_Final.docx

#### 7.0 PRELIMINARY SEISMIC INFORMATION AND RECOMMENDATIONS

#### 7.1 Ground Surface Rupture

The site is not located within an Alquist-Priolo (AP) Earthquake Fault Zone, as defined by the California Geological Survey (CGS), and it is not within 1,000 feet of an unzoned fault that is Holocene (11,000 years) or younger in age based on the USGS ArcGIS 2014 fault database. Therefore, fault rupture potential is considered low, and a Surface Fault Rupture Displacement Hazard Analysis (SFRDHA) is not required in accordance with Caltrans Bridge Memo to Designers (MTD) 20-10. The site location on the USGS 2014 Fault Map is shown in Figure 5.

#### 7.2 Acceleration Response Spectrum (ARS)

The Acceleration Response Spectrum (ARS) curve was developed following the latest Caltrans Seismic Design Criteria (SDC) 2.0 and Caltrans ARS Online version 3.0 tool, which uses the probabilistic 975-year return period uniform hazard spectrum based on the 2014 USGS National Hazard Map. As of 2019, Caltrans no longer considers deterministic earthquake events in the design spectrum. The site is not in a deep sedimentary basin, and no basin factors were applied.

ARS Online uses shear wave velocities in the upper 30 meters ( $V_{s30}$ ) to characterize soil conditions in development of ARS curves. The proposed retaining wall structure will traverse tertiary bedrock and a variable thickness of artificial fill. The tertiary bedrock and artificial fill areas are assumed to have  $V_{s30}$  of about 600 and 365 meters per second (m/s), respectively.

The preliminary design earthquake response spectrum at the site has a Peak Ground Acceleration (PGA) of 0.53g and 0.48g for  $V_{s30}$  of 600 m/s (bedrock) and 365 m/s (fill), respectively. Based on USGS deaggregation analysis reported by ARS Online v 3.0, the design earthquake mean magnitude at PGA associated with the design earthquake is **Mw**=6.63, and the mean site-source distance for spectral acceleration at 1 second period is 22.6 km.

#### 7.3 Liquefaction and Seismic Settlement

Liquefaction involves a sudden loss in strength of a saturated, cohesionless soil caused by the build-up of pore water pressure during cyclic loading, such as produced by an earthquake, and where it occurs its effects can include vertical and lateral ground displacements, slope instability and lateral spreading, and bearing failure. Typically, liquefaction occurs in areas where groundwater is less than about 60 feet from the surface and where the soils are composed predominantly of poorly consolidated fine sands, silty sands and non-plastic silts.

A portion of the site is located in a mapped State of California Liquefaction Hazard Zone. However, the liquefaction zones are associated with the mapped young alluvial fan deposits that have been altered along the alignment due to mass grading from during construction of Jamboree Road. The grading involved benching and keying into competent material and



controlled compacted backfill that was place up to 100 feet thick over the potentially liquefiable soils.

Bedrock is generally shallow along the existing cut slopes, loose cohesionless soils were not encountered in the embankment fill and static groundwater is deeper than 100 feet. Therefore, liquefaction is not a design concern for the retaining wall.

# 7.4 Global Stability

Two-dimensional limit equilibrium slope stability analyses were performed using the computer program SLIDE to assess the impact of the proposed retaining wall to the overall stability of the adjacent slopes. The analyses were performed using Spencer's (1967) method of slices and the static and seismic condition results are presented in Appendix E.

Strength parameters and bedding orientations for the analyses were selected based on existing data in Appendix C and our field and laboratory testing. The generalized anisotropic strength option was utilized for the Tvs formation to simulate a weak bedding orientation dipping at approximately 30 degrees. The weak bedding strength has pessimistically been chosen as a lower bound collection of siltstone strengths assigned to the Tvs formation and our interpretation has been annotated in the test results shown in Appendix C.

Evaluation of the global stability of the wall was evaluated at the two locations perpendicular to the wall at "J" Line Stations 109+50 and 139+00. These sections were chosen to represent cut into the toe of the slopes. The static condition evaluations for the proposed construction at the toe of the slope include a topography representing the exiting site condition, retaining wall in place and a temporary 1H:1V back cut to facilitate space for construction of the wall. Global stability under seismic loading conditions were conducted using a pseudo-static horizontal acceleration coefficient ( $k_h$ ) of 1/3 x PGA = 0.18.

The analyses indicate that the reduction in factor of safety as a result of the proposed improvement is sufficiently small (less than a 4 percent reduction from the existing condition evaluation) and that the factor of safety for the static and seismic loading conditions meet the required minimums of 1.5 and 1.1, respectively. The engineered artificial fill slopes will not be impacted by the proposed retaining wall since the change in mass is minimal and no large cuts are proposed.

# 8.0 PRELIMINARY FOUNDATION RECOMMENDATIONS

# 8.1 ERS Type Selection

Retaining walls are required to facilitate space for the proposed bikeway extension along the western side of Jamboree Road. The retaining wall is anticipated to be situated in sandstone and claystone of the Vaqueros and Sespe formation and in a man-made earthen berm over embankment fill. Considering the limited fill heights of five feet and anticipated bearing loads, a

N:\Projects\ AV\1700\IR742 ESA - Peters Canvon Bikeway Extension\07 Reports\IR742 ESA Peters Canvon Bikeway Extension PFR Final.docx



cast-in-place retaining wall similar to Caltrans Standard Plan Type I or Type 6A (case 2) retaining wall is considered feasible. Caltrans case 2 accounts for earth pressures associated with retaining a 2H:1V sloped ground condition. Considering the limited fill heights of 5 feet and anticipated bearing loads, the use of Caltrans Standard Plans with a  $K_h$  value of 0.20 is considered appropriate for the site. Construction of this type of wall will require a temporary construction back cut, and subsequent backfilling with imported structure backfill material.

Currently it is assumed that existing utilities parallel to the proposed wall alignment can be relocated, if needed, to facilitate space for the proposed footing and that the existing retaining wall located south of the intersection of Peters Canyon Road and Jamboree Road is planned to stay in place. However, a top-down construction method such as soldier pile and lagging or soil nail retaining wall could be considered if during design development the existing utilities cannot be relocated and/or the proposed retaining wall were extended to replace the existing wall requiring larger design heights and larger back cuts. Driving conditions will be difficult and soldier piles could consist of steel soldier beams, placed in drilled holes and backfilled with concrete. Pile lengths will be controlled by lateral displacements and should be designed for the lateral earth pressures provided in Section 8.2.

# 8.2 Lateral Earth Pressures

Walls should be constructed and backfilled with compacted structure backfill in accordance with Caltrans Specifications. A unit weight of 120 pcf and a friction angle of 34 degrees has been selected for design. Cantilever walls, which are free to rotate by at least 0.001 radian, may be assumed flexible and designed for the active condition. Active lateral earth pressure considering level and sloped backfill that can be utilized for design of the retaining walls are provided below.

- Active Pressure (Level Backfill): Ka=0.28, equivalent fluid pressure 34 pcf
- Active Pressure (2H:1V Sloping Backfill): Ka=0.41, equivalent fluid pressure 49 pcf

A total seismic equivalent fluid pressure for the level and sloped backfill conditions are 47 pcf and 80 pcf, respectively. The resultant force calculated from the recommended equivalent fluid unit weights should be assumed to act in a direction parallel to the backfill slope for external stability. These lateral earth pressures are applicable to cantilever solider piles if chosen for any portion of the wall and bond strengths for soil nail walls can be provided if needed.

# 8.3 Lateral Resistance

In general, resistance to lateral loads is provided by a combination of frictional sliding resistance at the foundation-soil interface and passive soil resistance on the side of the embedded portion of the footing. A nominal coefficient of sliding friction of 0.67 may be used. No resistance factor is required for concrete footings cast directly on the foundation soil and 0.8 shall be used for precast concrete.



A nominal equivalent fluid pressure of 300 pcf may be used on level ground, and 150 pcf may be used for sloping ground up to 2H:1V. Resistance factors may be taken from California Amendments to AASHTO LRFD Table 10.5.5.2.2-1.

#### 8.4 Bearing Capacity

For the height of the wall and anticipated subgrade materials, the site bearing capacity is expected to be more than adequate.

#### 8.5 Settlement

Settlement of the retaining wall footing is estimated to be less than 1-inch. Differential settlement may be taken as ½ inch over 40 feet.

#### 8.6 Wall Drainage

All of the above recommendations assume that the wall has adequate drainage provisions to prevent the buildup of hydrostatic pressure in the soil backfill. A proper drainage system should be designed in accordance with Caltrans Standard Plan BO-3, Detail 3-1, or approved alternate detail.

Water seepage was observed near the MWD facility and additional drainage should be evaluated in final design.

# 8.7 Subgrade Preparation

Prior to commencement of grading operations, debris, organic material and/or other unsuitable material should be removed and disposed of in accordance with Section 17-2 and 19-1 of Caltrans Standard Specifications (2018b).

After clearing and grubbing, areas to receive fills should be excavated to a minimum depth of 2 foot below the footing elevation. Removals should expose competent material and be observed by a representative of the Geotechnical Engineer of Record. The exposed subgrade should be scarified and compacted to not less than 90 percent relative compaction and should be slightly wet of the optimum moisture content.

# 9.0 CONSTRUCTION CONSIDERATIONS

• The onsite materials along the length of the wall will generally consist of engineered artificial fill and poorly-indurated sandstone and claystone of the Vaqueros and Sespe undifferentiated formation. The fill soils are considered rippable and excavations are feasible with conventional excavation equipment. Tvs is considered soft rock that will have some cemented zones and potentially oversize materials in conglomerates that can be difficult drilling and excavations. Generally the soft rock can be excavated and drilled with heavy effort using conventional equipment.



- All earthwork and grading should be performed in accordance with Sections 17 through 22 of Caltrans Standard Specifications (2018b). Removals should expose competent materials prior to any fill placement or foundation construction. Unsuitable residual soils and fill are anticipated to be less than 2 feet deep.
- Temporary excavations will be required for wall foundations. Existing improvements should be protected including buried utilities. Temporary excavations are anticipated into compacted artificial fill and soft rock along the length of the retaining wall and should be sloped at 1H:1V or flatter with the bottom 4 feet is permitted to be cut vertically. Back cut excavations along the soft rock can be increased to 3/4H:1V to minimize disturbance if needed.
- Structure backfill is required behind retaining walls to meet the requirements of Caltrans Standard Specifications Section 19-3.02C and compacted to a relative compaction of not less than 95 percent. The onsite materials generally are not anticipated to meet the minimum requirement of having a sand equivalent of at least 20.
- Existing MWD pipeline easements were identified as traversing the proposed retaining wall and should be coordinate for potential impacts.
- Existing buried utilities are located along the length of the proposed wall and should be identified for potential conflict with the proposed retaining wall type. If utilities are to be protected-in-place during final design, the utilities should be confirmed by as-built plans and/or potholing prior to any construction. A top-down construction method and associated retaining wall type such as soldier pile and lagging or soil nail retaining wall could be considered if utility conflicts cannot be relocated.
- Water staining was observed along the existing retaining wall south of Peters Canyon Road and Jamboree Road. Temporary release of water was observed upslope at the MWD facility that drained towards the slope. This water could be present during construction in the vicinity of the existing retaining wall if not coordinate with MWD for alternative drainage paths.
- The sandstone material along the proposed retaining wall would be difficult to drive piles into and predrilling would be required if a soldier pile and lagging wall was desired to minimize back cuts during construction.

#### **10.0 REFERENCES**

American Association of State Highway and Transportation Officials (2017). AASHTO LRFD Bridge Design Specifications (BDS), Customary Units, 8<sup>th</sup> Edition with Caltrans California Amendments.



- Caltrans (2020). Caltrans ARS Online (V3.0), Based on the 2014 USGS National Hazard Map, accessed at <u>https://arsonline.dot.ca.gov/</u>.
- Caltrans (2018a). Corrosion Guidelines, California Department of Transportation Division of Engineering and Testing Services, Material Engineering and Testing Services, Corrosion and Structural Concrete, Field Investigation Branch, Version 3.0, March.

Caltrans (2018b). Standard Specifications.

Caltrans (2017). Foundation Reports for Earth Retaining Structures, June.

- GeoSoils, Inc. (1989). Pavement Design Report Portion of Jamboree Road Station 309+80.47 through Station 395+00 Jamboree Road Extension, City of Orange, California for City of Tustin. July 28.
- Hunsaker & Associates (1987). Rough Grading Plan Jamboree Road for City of Orange Office of the City Engineer. November 19.
- Leighton and Associates, Inc. (1997). Revised Final Foundation Report Handy Creek Road Undercrossing Bridge No. 55-798. June 27.
- Pacific Soils Engineering, Inc. (1987). Preliminary Grading Plan Review Proposed Jamboree Road, City of Orange, California, S.P. 2821. December 29.

#### **11.0 LIMITATIONS**

The conclusions and recommendations contained in this report are professional opinions, intended for the use of OCPW, ESA, and subconsultants. This report has been prepared solely for structure planning study of the improvements described herein and may not contain sufficient information for other uses. The recommendations should not be extrapolated to areas not covered by this report or used for other facilities without the review and approval of GDC.

Our investigation and evaluations were performed in accordance with generally accepted local standards using that degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report.



FIGURES







Reference: OC Public Works (2019), Project Programming Report, Peters Canyon Bikeway Extension (EQ18420P)

Note: Images not to scale









STA 105+25 TO STA 139+55

#### CONSTRUCTION NOTES LIST:

- 1) PROTECT IN PLACE. ITEM PER PLAN
- 2 REMOVE ITEM PER PLAN
- (3) CONSTRUCT 4" PCC SIDEWALK/BIKEWAY, WIDTH PER PLAN
- (4) CONSTRUCT GRAVITY RETAINING WALL, HEIGHT PER PLAN
- (5) INSTALL PEDESTRIAN FENCING, 42" HIGH
- (6) INSTALL BIKE LANE BUFFER STRIPING, WIDTH PER PLAN.
- (7) MAINTAIN EXISTING STRIPING AND PAVEMENT MARKINGS.
- (8) INSTALL GREEN BIKE LANE PAVEMENT MARKINGS.
- (9) INSTALL BIKE LANE CONFLICT (BROKEN) STRIPING, LENGTH PER PLAN.
- (10) REMOVE CONFLICTING PLANTING AND IRRIGATION, AND RESTORE LANDSCAPING, AS NEEDED.
- (11) REMOVE AND RECONSTRUCT SLOPE DRAINAGE SYSTEM.
- (12) CONSTRUCT CURB RAMP, 8' WIDE.



Orange & Tustin, California

PROPOSED RETAINING WALL TYPICAL SECTIONS

DELTA



Reference: Google Earth 2020 (Imagery Date 4/2/2018) Notes: Borings located near toe of slope at the proposed wall layout line







Strike Slip Thrust

Unassigned 🗕

GROUP	GROUP DELTA CONSULTANTS, INC. ENGINEERS AND GEOLOGISTS 32 MAUCHLY, SUITE B IRVINE, CA 92618 (949) 450-2100	PROJECT NO.: IR742
	PROJECT NAME: Peters Canyon Bikeway Orange & Tustin, California	FIGURE NO.: <b>5</b>
DELTA	FAULT LOC	ATION MAP

APPENDIX A FIELD INVESTIGATION

# Page A-1

# SOIL IDENTIFICATION AND DESCRIPTION SEQUENCE

e		Refe Sec	er to tion	pe	le
Sequen		Field	Lab	Require	Option
1	Group Name	2.5.2	3.2.2		
2	Group Symbol	2.5.2	3.2.2		
	Description Components				
3	Consistency of Cohesive Soil	2.5.3	3.2.3		
4	Apparent Density of Cohesionless Soil	2.5.4			
5	Color	2.5.5			
6	Moisture	2.5.6			
	Percent or Proportion of Soil	2.5.7	3.2.4		
7	Particle Size	2.5.8	2.5.8		$\bigcirc$
	Particle Angularity	2.5.9			$\bigcirc$
	Particle Shape	2.5.10			$\bigcirc$
8	Plasticity (for fine- grained soil)	2.5.11	3.2.5		0
9	Dry Strength (for fine-grained soil)	2.5.12			0
10	Dilatency (for fine- grained soil)	2.5.13			$\bigcirc$
11	Toughness (for fine-grained soil)	2.5.14			0
12	Structure	2.5.15			$\bigcirc$
13	Cementation	2.5.16			
14	Percent of Cobbles and Boulders	2.5.17		•	
17	Description of Cobbles and Boulders	2.5.18			
15	Consistency Field Test Result	2.5.3			
16	Additional Comments	2.5.19			$\bigcirc$

# Describe the soil using descriptive terms in the order shown

#### Minimum Required Sequence:

USCS Group Name (Group Symbol); Consistency or Density; Color; Moisture; Percent or Proportion of Soil; Particle Size; Plasticity (optional).

e optional for non-Caltrans projects

#### Where applicable:

Cementation; % cobbles & boulders; Description of cobbles & boulders; Consistency field test result

Ref.: Caltrans Soil and Rock Logging Classification, and Presentation Manual (2010)

# HOLE IDENTIFICATION

Holes are identified using the following convention:

#### H-YY-NNN

Where: *H:* Hole Type Code *YY:* 2-digit year *NNN:* 3-digit number (001-999)

Hole Type Code	Description
А	Auger boring (hollow or solid stem, bucket)
R	Rotary drilled boring (conventional)
RC	Rotary core (self-cased wire-line, continuously-sampled)
RW	Rotary core (self-cased wire-line, not continuously sampled)
Р	Rotary percussion boring (Air)
HD	Hand driven (1-inch soil tube)
HA	Hand auger
D	Driven (dynamic cone penetrometer)
CPT	Cone Penetration Test
0	Other (note on LOTB)

#### **Description Sequence Examples:**

SANDY lean CLAY (CL); very stiff; yellowish brown; moist; mostly fines; some SAND, from fine to medium; few gravels; medium plasticity; PP=2.75.

Well-graded SAND with SILT and GRAVEL and COBBLES (SW-SM); dense; brown; moist; mostly SAND, from fine to coarse; some fine GRAVEL; few fines; weak cementation; 10% GRANITE COBBLES; 3 to 6 inches; hard; subrounded.

Clayey SAND (SC); medium dense, light brown; wet; mostly fine sand,; little fines; low plasticity.



Page A-2								
Granhic	GROUP SYMBOLS AND NAMES FIELD AND LABORATORY TESTS							
Graphic	/ Symbo				Lean CLAY	C Consolidation (ASTM D 2435-04)		
	GW	Well-graded GRAVEL	$\mathbb{V}$		Lean CLAY with SAND	CL Collapse Potential (ASTM D 5333-03)		
		Well-graded GRAVEL with SAND	V/	CL	Lean CLAY with GRAVEL SANDY lean CLAY	CP Compaction Curve (CTM 216 - 06)		
2000	GP	Poorly graded GRAVEL	V/	$\lambda$	SANDY lean CLAY with GRAVEL	CR Corrosion, Sulfates, Chlorides (CTM 643 - 99;		
	GP	Poorly graded GRAVEL with SAND	$\mathbb{V}$		GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND	CTM 417 - 06; CTM 422 - 06)		
		Well-graded GRAVEL with SILT	ľπí	1	SILTY CLAY	CU Consolidated Undrained Triaxial (ASTM D 4767-0		
	GW-GM	Well-graded GRAVEL with SILT and SAND		$\langle \rangle$	SILTY CLAY with SAND	DS Direct Snear (ASTM D 3080-04)		
		Well-graded GRAVEL with CLAY (or SILTY		CL-M	L SANDY SILTY CLAY	EI Expansion Index (ASTM D 4829-03)		
	GW-GC	CLAY) Well-graded GRAVEL with CLAY and SAND	IIII		GRAVELLY SILTY CLAY with GRAVEL	M Moisture Content (ASTM D 2216-05)		
		(or SILTY CLAY and SAND)	ЩĽ.	4—	GRAVELLY SILTY CLAY with SAND	De Dermachility (CTM 220, 05)		
2003	GP.GM	Poorly graded GRAVEL with SILT			SILT SILT with SAND	P Permeability (CTM 220 - 05)		
	01-011	Poorly graded GRAVEL with SILT and SAND			SILT with GRAVEL	PA Particle Size Analysis (ASTM D 422-63 [2002])		
200		Poorly graded GRAVEL with CLAY	1		SANDY SILT SANDY SILT with GRAVEL	(AASHTO T 89-02, AASHTO T 90-00)		
	GP-GC	Poorly graded GRAVEL with CLAY and SAND			GRAVELLY SILT	PL Point Load Index (ASTM D 5731-05)		
100		(or SILLY CLAY and SAND)	$\mathbb{H}$	닛		PM Pressure Meter		
500	GM	SILTY GRAVEL	V	7	ORGANIC lean CLAY with SAND	PP Pocket Penetrometer		
2999		SILIY GRAVEL with SAND	Pr		ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY	<b>R</b> R-Value (CTM 301 - 00)		
8	66	CLAYEY GRAVEL	K	7	SANDY ORGANIC lean CLAY with GRAVEL	SE Sand Equivalent (CTM 217 - 99)		
5/2	90	CLAYEY GRAVEL with SAND	V.	1	GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND	<b>SG</b> Specific Gravity (AASHTO T 100-06)		
BQ 1		SILTY, CLAYEY GRAVEL	<u>ر(</u>	)	ORGANIC SILT	SL Shrinkage Limit (ASTM D 427-04)		
16	GC-GM	SILTY, CLAYEY GRAVEL with SAND	$ \langle \langle$	$\left  \right $	ORGANIC SILT with SAND ORGANIC SILT with GRAVEL	SW Swell Potential (ASTM D 4546-03)		
PLI9 / J			$\langle \langle$	(   OL	SANDY ORGANIC SILT	TV Pocket Torvane		
• • • •	sw	Well-graded SAND	$ \rangle\rangle$	21	SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT	UC Unconfined Compression - Soil (ASTM D 2166-06		
- م اهــــه		Well-graded SAND with GRAVEL	$\left \right\rangle$		GRAVELLY ORGANIC SILT with SAND	Unconfined Compression - Rock (ASTM D		
	66	Poorly graded SAND	$\mathbb{V}$		Fat CLAY	UU Unconsolidated Undrained Triaxial		
	5P	Poorly graded SAND with GRAVEL			Fat CLAY with GRAVEL	(ASTM D 2850-03)		
		Well-graded SAND with SILT	//	СН	SANDY fat CLAY SANDY fat CLAY with GRAVEL	UW Unit Weight (ASTM D 4/67-04)		
	SW-SM	Well graded SAND with SILT and CRAVEL	//		GRAVELLY fat CLAY	<b>VS</b> Vane Shear (AASHTO T 223-96 [2004])		
			$\mathbb{H}$		GRAVELLY fat CLAY with SAND	-		
	sw-sc	Well-graded SAND with CLAY (or SILTY CLAY)			Elastic SILT Elastic SILT with SAND			
		(or SILTY CLAY and GRAVEL)	AND with CLAY and GRAVEL Y and GRAVEL)		Elastic SILT with GRAVEL	SAMPLER GRAPHIC STMBOLS		
		Poorly graded SAND with SILT			SANDY elastic SILT with GRAVEL			
	SP-SM	Poorly graded SAND with SILT and GRAVEL			GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND	Standard Penetration Test (SPT)		
		Poorly graded SAND with CLAY (or SILTY CLAY)	2	7	ORGANIC fat CLAY			
	SP-SC	Poorly graded SAND with CLAY and GRAVEL	Pr		ORGANIC fat CLAY with SAND	Standard California Sampler		
		(or SILTY CLAY and GRAVEL)	1	ОН	SANDY ORGANIC fat CLAY			
	SM	SILTY SAND	Ø,	2	SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY			
		SILTY SAND with GRAVEL	2e		GRAVELLY ORGANIC fat CLAY with SAND	Modified California Sampler		
		CLAYEY SAND	122	2	ORGANIC elastic SILT			
	SC	CLAYEY SAND with GRAVEL	$ \rangle\rangle$	»I	ORGANIC elastic SILT with GRAVEL			
πA		SILTY, CLAYEY SAND	1% ((	ОН	SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVFI	Shelby Tube Piston Sampler		
	SC-SM		$ \langle \langle \rangle$	<i>(</i>	GRAVELLY ORGANIC elastic SILT			
		GET, CETET SAND WILL GRAVEL			GRAVELLY ORGANIC elastic SILT with SAND			
<u> 11 11</u>	РТ	PEAT	וריזא		ORGANIC SOIL ORGANIC SOIL with SAND			
<u> 14 84 8</u>			ĬĨ					
DOC		COBBLES			SANDY ORGANIC SOIL with GRAVEL	Bulk Sample Other (see remarks		
		COBBLES and BOULDERS BOULDERS	$\mathbb{P}$	2	GRAVELLY ORGANIC SOIL			
<u>N</u> N			<u>r/ -/</u>					
		DRILLING MET	HO	DSYM	BOLS	WATER LEVEL SYMBOLS		
Ш		<b>_</b>	$\square$	Dynam				
Auger Drilling Rotary Drilling								
	DEF	INITIONS FOR CHANGE IN	MA	FERIAL	Ref.: Caltran	ns Soil and Rock Logging Classification, and Presentation Manual (20		
Term		efinition		Symt	ool			
Meter		hange in material is observed in the	;					
Material Sample or core, and the location								
	0	t change can be accurately measure	ed.					
Estimated Change in material cannot be accurately			AND GEOLOGISTS A-IB					
Materia	al lo	cated because either the change is			🔺 👗	PROJECT NAME PROJECT NUMBER		
Chang	le g	radational or because of limitations i	in the	e				
	d	ming/sampling methods used.						
Soil/Ro	ock N	laterial changes from soil characteri	stics	/				
Bound	ary to	o rock characteristics.						

Page A-3 CONSISTENCY OF COHESIVE SOILS						
Descriptor	Shear Strength (tsf)	Pocket Penetrometer, PP Measurement (tsf)	Torvane, TV. Measurement (tsf)	Vane Shear, VS. Measurement (tsf)		
Very Soft	< 0.12	< 0.25	< 0.12	< 0.12		
Soft	0.12 - 0.25	0.25 - 0.50	0.12 - 0.25	0.12 - 0.25		
Medium Stiff	0.25 - 0.50	0.50 - 1.0	0.25 - 0.50	0.25 - 0.50		
Stiff	0.50 - 1.0	1.0 - 2.0	0.50 - 1.0	0.50 - 1.0		
Very Stiff	1.0 - 2.0	2.0 - 4.0	1.0 - 2.0	1.0 - 2.0		
Hard	> 2.0	> 4.0	> 2.0	> 2.0		

APPARENT DENSITY OF COHESIONLESS SOILS				
Descriptor	SPT N <sub>60</sub> - Value (blows / foot)			
Very Loose	0 - 5			
Loose	5 - 10			
Medium Dense	10 - 30			
Dense	30 - 50			
Very Dense	> 50			

MOISTURE		
Descriptor	Criteria	
Dry	No discernable moisture	
Moist	Moisture present, but no free water	
Wet	Visible free water	

PERCENT OR PROPORTION OF SOILS		
Descriptor	Criteria	
Trace	Particles are present but estimated to be less than 5%	
Few	5 to 10%	
Little	15 to 25%	
Some	30 to 45%	
Mostly	50 to 100%	

PARTICLE SIZE				
Descriptor		Size (in)		
Boulder		> 12		
Cobble		3 - 12		
Gravel	Coarse	3/4 - 3		
	Fine	1/5 - 3/4		
Sand	Coarse	1/16 - 1/5		
	Medium	1/64 - 1/16		
	Fine	1/300 - 1/64		
Silt and Clay		< 1/300		

PLASTICITY OF FINE-GRAINED SOILS		
Descriptor	Criteria	
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.	
Low	The thread can barely be rolled, and the lump cannot be formed when drier than the plastic limit.	
Medium	The thread is easy to roll, and not much time is required to reach the plastic limit; it cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.	
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.	

CONSISTENCY OF COHESIVE SOILS VS. N <sub>60</sub>		
Description	SPT N <sub>60</sub> (blows / foot)	
Very Soft Soft Medium Stiff Stiff Very Stiff Hard	0 - 2 2 - 4 4 - 8 8 - 15 15 - 30 > 30	

Ref: Peck, Hansen, and Thornburn, 1974, "Foundation Engineering", Second Edition

Note: Only to be used (with caution) when pocket penetrometer or other data on undrained shear strength are unavailable. Not allowed by Caltrans Soil and Rock Logging and Classificaton Manual, 2010

CEMENTATION		
Descriptor	Criteria	
Weak	Crumbles or breaks with handling or little finger pressure.	
Moderate	Crumbles or breaks with considerable finger pressure.	
Strong	Will not crumble or break with finger pressure.	



Ref.: Caltrans Soil and Rock Logging Classification, and Presentation Manual (2010), with the exception of consistency of cohesive soils vs.  $N_{\rm sor}$
Page /	CK GR	APHIC SYMBOLS	;				BEDI	DING	SPACING	)	7	
	10117				De	escriptor			Thickne	ss or Spacing		
$\boxtimes$	IGNE	DUS ROCK			Ma	assive	hahha		> 10 ft 3 to 10 f	't		
	SEDI	MENTARY ROCK			Th	ickly bedde	edded		1 to 3 ft			
					Mo Th	oderately being	edded d		3-5/8 inc 1-1/4 to	ches to 1 ft 3-5/8 inches		
	META	MORPHIC ROCK			Ve La	ry thinly be minated	edded		3/8 inch < 3/8 inc	to 1-1/4 inches		
			WEA	THEF		<b>G DESCR</b>	IPTORS	FOR	INTACT R	OCK	_	
				D	iagn	ostic Feat	ures					
Description	Chemi	cal Weathering-Disco	loration	Oxida	ation	Mechanica and Grai	al Weather	ing ry —	Texture an	d Solutioning	0	
Eresh	No disc	coloration not	No disc	olorati	ion	Con No separat	ion intact	N	o change	Solutioning No solutioning	Hammer rings v	when crystalline
	oxidize	d	or oxida	ation		(tight)					rocks are struck	
Slightly Weathered	Discold limited distanc some fo dull	ration or oxidation is to surface of, or short e from, fractures; eldspar crystals are	Minor to comple discolor oxidatio surface	te ation of n of m s	or ìost	No visible s intact (tight	separation,	Pi	reserved	Minor leaching of some soluble minerals may be noted	Hammer rings v rocks are struck not weakened.	vhen crystalline Body of rock
Moderately Weathered	Discolo extends usually minera crystals	oration or oxidation s from fractures throughout; Fe-Mg ls are "rusty"; feldspar s are "cloudy"	All fract surface discolor oxidized	ure s are ed or d		Partial sepa boundaries	aration of visible	G pr	enerally reserved	Soluble minerals may be mostly leached	Hammer does r rock is struck. I slightly weaken	iot ring when 3ody of rock is ed.
Intensely Weathered	Discolo through Fe-Mg to clay chemic in situ o to grain conditio	ration or oxidation rout; all feldspars and minerals are altered to some extent; or al alteration produces disaggregation (refer boundary ons)	All fract surface discolor oxidized surface friable	ure s are red or d; s are		Partial sepa is friable; ir conditions, disaggrega	aration, roc n semi-arid granitics a ted	k Al ch re di su hy ar	Itered by nemical sintegration uch as via ydration or rgillation	Leaching of soluble minerals may be complete	Dull sound whe hammer; usuall broken with mo manual pressur hammer blow w reference to pla weakness such hairline fracture Rock is significa	n struck with y can be derate to heavy e or by light vithout nes of as incipient or s or veinlets. antly weakened.
Decomposed	Discolo through minera be una and Fe	ored of oxidized hout, but resistant Is such as quartz may Itered; all feldspars -Mg minerals are				Complete s grain bound (disaggrega	separation daries ated)	of R cc st le us	esembles a somplete remi cructure may aching of so sually complete	soil; partial or nant rock be preserved; luble minerals ete	Can be granula Resistant miner quartz may be p "stringers" or "d	ted by hand. als such as present as ikes".
the combinati	ion desc E STR	ENGTH OF INTAC	to inter	K	veath	ered".			ROCK F	IARDNESS		
Descriptor		Uniaxial Compressive Stren	ath (psi)		Des	criptor	Criteria					
Extremely		> 30,000	<u>J (  - )</u>		Extr	emely Hard	Specimen	canne	ot be scratch	ed with pocket kni	ife or sharp pick;	can only be
Very Strongst	rong	14,500 - 30,000			Very	hard	Specimen	canne	ot be scratch	ed with pocket kni	ife or sharp pick;	breaks with
Strong		7,000 - 14,500			Hard	d l	Specimen	can b	nammer bio be scratched	ws with pocket knife (	or sharp pick witl	n heavy
Medium Stro	ng	3,500 - 7,000			Mod	orotoly	pressure;	heavy	hammer blo	ows required to bre	eak specimen	light or
Weak		700 - 3,500			Hard		moderate	press	ure; breaks v	with moderate har	nmer blows	i ligrit or
Very Weak	a a k	150 - 700			Mod Soft	erately	Specimen or heavy p	can b pressu	e grooved 1 ire; breaks w	/6 in. with pocket k vith light hammer b	knife or sharp pic low or heavy hai	k with moderate
Extremely vv	еак	< 150		_	Soft		Specimen	can b	e grooved o	r gouged with poc	ket knife or shar	pick with light
CORE R	RECOV		ON (%)		Ver	y Soft	Specimen carved wit	can b can b	e readily ind ket knife; bre	lented, grooved, or eaks with light han	r gouged with fin d pressure	gernail, or
$\Sigma$ Length o	f the rea	covered core pieces (	(in.) v 1(						FRACTU	RE DENSITY		]
Tota	I length	of core run (in.)	X IV		Des	criptor		Crite	ria			
				-	Unf	ractured		No fr	actures			
R		ALCULATION (%)		ן ר	Ver	y Slightly Fr	actured	Leng	ths greater 3	3 ft	outside that range	0
ς.				7	Mod	derately Fra	ctured	Leng	ths mostly in	range of 4 in. to 1	ft, with most ler	igths about 8 in.
Length Total	l of inta length	ct core pieces > 4 in. of core run (in.)	x 100		Inte	nsely Fractu	ured	Leng	ths average als with leng	from 1 in. to 4 in. v gths less than 4 in.	with scattered fra	igmented
					Ver	y Intensely I	Fractured	Most	ly chips and	fragments with fev	v scattered short	core lengths
									GROU	GROUP DELTA CO	ONSULTANTS, INC. AL ENGINEERS	
										AND GEO	DLOGISTS	PROJECT NUMBER
									§ (			
Ref.: Caltrans Soi	l and Roc	k Logging Classification, and	d Presenta	tion Mar	nual (2	2010)			DELTA		G RECORD I	_EGEND #4

		ΙΝΙ					PI	ROJI	ECTI	NAME							PROJECT	NUMBER	1	HOLE ID
		IIN	ЧΓ		Uπ	D	P	eter	s Ca	anyor	ı Bike	way	Exte	nsion			IR742			B-1
SITE LO	CATION		~												STAR	Г	FINI	SH		SHEET NO.
Oran	ge Cou	nty,	Califo	rnia								105			7/23	3/2020		<u>23/2020</u>	)	
Dacifi			0		iLL RIG	,				ILLIN(	inter Slight	עטד ביימי	۵r							Givens
HAMME	R TYPE	WEI	GHT/DR	ROP)	HAM	IMER EF	FICI	ENC	3 Y (ER			)IA, (ii	n) TO	TAL DEP	TH (ft)	GROUN	DELEV (ff)	DEPTH	ELEV. G	W (ft)
Hamr	ner: 14	0 lb	s., Dro	, p: 30 i	n. Cat	thead		-	,	6		(	1	5.3		597	(14)		/ NE	DURING DRILLING
DRIVE S	AMPLE	R TY	PE(S) &	SIZE (ID	))		N	IOTE	s				'		I	001				AFTER DRILLING
SPT (	<u>1.4"), (</u>	CAL	(2.4")					ET	R~	<u>60%</u> ,	N <sub>60</sub> ~	60/6	<u>60 *</u> I	<u>N ~ 1.0</u> 0	0 * N			<u>▼</u> / N	IE	
(feet)	et)	Е ТҮРЕ	E NO.	RATION TANCE 5/6 IN	FT "N"	*2 <sup>09</sup>	RY (%	(%)	URE (		BERG (LL:PI)	TS	Ы Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц	UHIC B						
PT T	EV⊿ (fee	1PL E	MPL	OWSIS	MO	SPT	OVE	g	UIS  (%)		ITS	DTH TES	RIL E	LO			DESCRIPT	ION AND	CLASSI	FICATION
B	L II	SAN	SA	(BL R PE	В		RC	<u>ا ت</u>	Ź	DRY	AT' LIM	<u> </u>		0						
													<u> </u>			<u></u>		· · · ·		
		$\bigotimes$											$ \lambda $		FILL:	SILTY S	SAND (SM fine SAND	); yellow ) some fi	ish brov	wn (10YR 5/4); nplastic: trash
F	-	$\bigotimes$											)}		and de	ebris in	fill.			
L	595	$\bigotimes$											$ \langle  $		VAO				IEEED	
		$\bigotimes$	B1									EI	X		FORM	ATION	IS: POORI	Y-INDU	RATED	
F	-	$\otimes$											]}		SEDI	MENTA	RY ROCK	(Clayey	Sandst	one); medium
L	L	$\bigotimes$											{[		graine	ed; light elv wea	yellowish l athered: ve	prown (1 rv soft <sup>.</sup> (	UYR 6/4 CLAYF	+); moderately to Y SAND (SC)
		$\bigotimes$											IX.		very d	lense; n	noist; most	ly fine to	mediur	n SAND; little
5		$\times \times$													tines;	trace G	RAVEL; lo	w plastic	uty; wea	akly cemented).
L			R2-1	17	62	41						PA	$ \{ $		3% G	ravel, 73	3% Sand, 3	24% Fin	es	
		$\square$	R2-2	36					9	113		DS	K		POOF	REY-INC		SEDIME		
F	590	$\vdash$		21									$ \rangle$		below	ground	le), ny cha I surface: c	coarse G	RAVEL	in spoils.
L		$\square$	S3	50	50/6"	>100							l{		POOF	<b>YEY-INE</b>	URATED	SEDIME	NTARY	ROCK (Silty
Г													K		Sands	stone); r ? 6/4)• ~	nedium gr	ained; lig	ht yello	wish brown
$\vdash$	<b>–</b>														(SILT)	Y SAND	) (SM); ver	y dense:	; moist;	mostly fine to
10													$ \{ \zeta \}$		mediu	Im SAN	D; little fine	es; trace	GRAVE	EL; nonplastic;
		$\ge$	S4	50/4"	50/4"	>100							14		mode	rately ce	emented).			
$\vdash$	<u> </u>												$ \rangle$		(Weal	kly ceme	ented; sligl	ntly mica	ceous).	
	EOE												Ŋζ		]					
F													$ \langle  $							
F	L-												$ \lambda $		⊨					
													)}		POOF	RLY-IND	URATED	SEDIME		ROCK (Clavev
F													$ \langle  $		Sands	stone); v	very dense	; reddish	brown	(5YR 4/3);
15	L		85	50/3"	50/3"	>100						рі	[]X		moist;	mostly	iine SANE	; some t	iines; m	eaium plasticity).
š -	_		55		00/0	- 100									NOTE	S:				
5	580														<u> </u>	 		= =		
	0														1. Bot	tom of e face	excavation	at 15.3 1	teet belo	ow ground
}_	<b>–</b>														2. Exc	avation	terminate	d at targ	et depth	ı.
5															3. Gro	oundwat	ter not enc		during	drilling.
															the Ca	altrans S	Soil &Rock	Loggino	j, Class	ification, and
20															Prese	ntation	Manual (20	010 <u>)</u> .		
	F																			
-	_575																			
	-																			
	L																			
GRO	UP										THIS	SUMN	/ /ARY		S ONLY	AT THE	LOCATION	1		
	GROUP DELTA CONSULTANT									5	OF TH						DRILLING.		F	IGURE
		3	2 Ma	uchly	/, Su	ite B					LOCA	TION		D MAY CH	HANGE	AT THIS	S LOCATIO	N		
		ь.		~ ^ ^	004	<u>~</u>					WITH		PASS	AGE OF	TIME. 1			,		A-2
DEL	TΛ	Ir	vine,	CA 9	9261	8					CONL			A SIMPLI		JN UF I	HE ACTUA	·-		

B	OR	IN	G R	REC	OR	D	PF	ROJE		IAME	Dile		<b>E</b> vta				PROJ	ECT	NUMBER		
SITE LO							Pe	eters	s Ca	inyor	BIKE	way	Exte	ension	STAF	RT		4Z FINIS	SH		D-2 SHEET NO.
Oran	ge Cou	nty,	Califo	rnia											7/2	2/2020		7/2	22/2020		1 of 2
DRILLIN	G COMF			DR	ILL RIG	i			DRI	LLING	METH	HOD					LOG	GED	BY	CHE	CKED BY
HAMME	R TYPE		0. GHT/DR	OP)	проа	MER EF	FICIE	ENCY	(ER	i) BOI	RING D	Auge	ו: ו) דס	TAL DEP	TH (ft)	GROUN	ID ELE	varv V (ft)	DEPTH/E	IVI. <i>LEV.</i> G	W (ft)
Hamr	ner: 14	0 lbs	s., Dro	p: 30 ii	n. Cat	head			•	6			2	7.9	( )	608		( )	<b>⊻ NE /</b>	NE	DURING DRILLING
DRIVE S	AMPLE		PE(S) &	SIZE (ID	)		N	OTE	s			0.010							<b>V</b> ( ) (	_	AFTER DRILLING
SPI (	1.4"), C		(2.4")						< ~ t	50%,	N <sub>60</sub> ∼	60/6	50 ^	N ~ 1.00	) ^ N				± / NE	=	
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	SPT N <sup>*</sup> 60	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG			DESC	RIPT	ION AND C	LASSI	FICATION
-	 605 		B1												FILL (5YR fine \$	: CLAYE : 5/3) an SAND; s	EY SAN Id yello Some fil	ND (S wish nes;	SC); varial brown (10 trace GR/	oly rec DYR 5 AVEL;	Idish brown (4); moist; mostly low plasticity.
5 -			B2 R3-1 R3-2	10 23 41	64	43			19	112		PA PI			mottl mois	ed with t; mostly	gray (1 / fines;	i0YR som and, {	5/1) and e SAND; 58% Fines	white mediu	(140YR 8/1); m plasticity.
-	600 														SIL I mottl SAN	ed with D; little t	reddisł to some	aen: h bro e fine	se; yellow wn (5YR es; nonpla	isn bro 5/3); n stic.	own (10YR 5/4) noist; mostly fine
-			S4	9 12 20	32	32						PA PI			CLA` reddi brow trace sand	YEY SA sh brow n (10YF GRAVE stone pi	ND (S0 /n (5YF R 5/4); i EL; low resent	C); de R 4/3 moisi v plas in sa	ense; varia ), gray (5\ t; mostly fi ticity; frag mple.	ably b /R 5/1 ine SA ments	rown (10YR 4/3), ), and yellowish NDD; some fines; s of intact
													S.		1% C	Gravel, 5	50% Sa	and, 4	49% Fines	6.	
- 2													5		Diffic grou	ult drillir	ng and ice.	rig c	hatter fror	n 12 -	14 feet below
	  590		<b>R5-1</b> R5-2	24 50/5"	50/5"	>70			16 16	111 109		DS			SILT mottl fine t nonp	Y SANE ed with o mediu lastic.	) (SM); browni ım SAN	very sh ye ND; s	v dense; b ellow (10Y ome fines	rown ( ′R 6/6 ;; few 1	10YR 4/3) ); moist; mostly fine GRAVEL;
$5^{1}$ S6 $19$ S6 $19$ S6 $30$														Frag	ments o	f intact	san	dstone pre	esent i	n sample.	
	—585 —	$\bigotimes$	В7												Diffic cours CLA	ult drillir se grave YEY SA	ng from el in spo ND (S0	1 23 - oils.  C): de	24 feet b 	elow ( 	ground surface; 
GRO	UP	G	ROU	P DE	LTA	CONS	SUL	.TA	NT	s	THIS S	SUMN		APPLIES		( AT THE		TION		F	IGURE
		32	2 Ma	uchly	, Su	ite B					LOCA	URFA TION	S ANI	D MAY CH	NS MA	AY DIFFE E AT THI	ER AT ( S LOC/	ATIO	R N		
DEL	32 Mauchly, Suite B Irvine, CA 92618												PASS D IS	AGE OF A SIMPLI	TIME. FICAT	THE DA	TA THE AC	CTUA	L		A-3 a

Page A-7

L

							PF	ROJE		IAME								PRO.	IECT	NUMBER	र	HOLE ID
D		IIN	Gr			U	Pe	Peters Canyon Bikeway Extension								IR	742			B-2		
SITE LO	CATION														STAR	RT			FINIS	SH	-	SHEET NO.
	je Cou G COMF	nty, ••••	Califo	rnia		•									7/2	22/2	2020			22/2020 BV	) Сн	
Pacifi	c Drillir	na C	0		rinod	•			S	olid F	-liaht	Aude	∽r					S	Nan	veson		I Givens
HAMME	RTYPE	(WEI	GHT/DF	ROP)	HAM	MER EF	FICIE	ENC	r (ER	i) BOF		IA. (in	1) TO	TAL DEPT	TH (ft)	GF	ROUNI	DELE	V (ft)	DEPTH	ELEV.	GW (ft)
Hamn	ner: 14	0 lbs	s., Dro	p: 30 i	n. Cat	head			•	6		•	2	7.9		6	808				I / NE	DURING DRILLING
DRIVE S	AMPLE	R TYP	PE(S) &	SIZE (ID	D)		N	OTE	S	_					I					_		AFTER DRILLING
SPT (	1.4"), C	CAL	(2.4")					ET	२ ~ (	<u>50%,</u>	N <sub>60</sub> ~	60/6	<u>50 * I</u>	N ~ 1.00	) * N					<u></u> <b>¥</b> //	VE	
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	SPT N <sup>*</sup> 60	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG				DESC	CRIPT	ION ANE	) CLAS	SIFICATION
-		X	S8 S9	25 30 50/5" 50/5"	80/11" 50/5"	>80 >100									FILL mottle and r medi Diffic	. (co led redo ium cult	gray gray dish b SAN drillin	u <b>ed)</b> (10YF prown D; so g, au	CLAY R 6/1) (5YR me fir ger re	YEY SAN , yellow R 4/4); m nes; low efusal.	ND (SC ish bro noist; m plastio	C); very dense; wn (10YR 5/4), nostly fine to city
															NOT	ES:	:					
20															1. Bo	otto	m of e	excav	ation	at 27.9	feet be	elow ground
30  -	  575														su 2. Ex 3. Gr 4. Th the C Prese	irfac kcav rour nis E Calti enta	ce. vation ndwat Boring rans S ation	term er no Rec Soil & Manu	inateo t enco ord w Rock al (20	d due to ountered vas prep Logging 010).	auger d durin ared ir g, Clas	refusal. g drilling. n accordance with ssification, and
- 	_																					
-	—570 —																					
40																						
	— —565 —																					
45 	_																					
	560 																					
GRO	UP	G		P DE	LTA		SUL	TA	NT	s	THIS S OF TH SUBS	SUMN IIS BC URFA	IARY DRING	APPLIES S AND AT ONDITIO	ONLY THE NS MA	y at Tim Ay i	T THE IE OF DIFFE	LOC/ DRILL R AT	ATION LING. OTHE	R	ł	FIGURE
	GROUP DELTA CONSULTANT 32 Mauchly, Suite B Irvine, CA 92618										LOCA WITH PRES	TIONS THE F ENTE	S ANE PASS D IS /	D MAY CH AGE OF A SIMPLI	IANGE TIME. FICATI	E A TH ION	t this Ie da <sup>-</sup> I of t	S LOC TA THE A	ATIOI CTUA	N L		A-3 b

BORING RECORD										PROJECT NAME Peters Canyon Bikeway Extension							PROJECT NUMBER HOLE ID		HOLE ID		
			GT			D	Peters Canyon Bikeway Extension IK/42 START FIN 7/21/2020 7/						42			B-3					
		ntv	Califo	rnia												1/2020			эп 21/2004	n	J of 1
DRILLIN	IG COM	PANY	, v		ILL RIG	}			DR		G METI	HOD			112	1/2020	LOG	GED	<u>2 1/2020</u> BY		
Pacifi	ic Drillir	ng C	0.	T	ripod				S	olid I	=light	Auge	ər				S.	Narv	/eson	M	Givens
HAMME	R TYPE	(WEI	GHT/DF	ROP)	HAN	IMER EF	FICI	ENC	Y (ER	i) BO	RING D	IA. (ir	TO' (ו	TAL DEP	TH (ft)	GROUN	D ELE	/ (ft)	DEPTH	ELEV.	GW (ft)
Hamr	mer: 14	0 lb	s., Dro	p: 30 i	n. Cat	thead				6			1	0.6		600			⊻ NE	/ NE	DURING DRILLING
			PE(S) &	SIZE (ID	<b>D</b> )		N		ES D	200/	NI .	60/6	۰× ۱	N 1 00	ר <b>א</b> או				<b>.</b>		AFTER DRILLING
SPT (	(1.4), (		(2.4)						κ~ι 	00%,	™ <sub>60</sub> ~	00/0		N ~ 1.00					- 11	VE	
DEPTH (feet)	DEPTH (feet) ELEVATION (feet) (feet) SAMPLE TYPE SAMPLE NO. PENETRATION RESISTANCE (BLOW/FT "N" BLOW/FT "N" BLOW/FT "N" RECOVERY (%) RECOVERY (%) RECOVERY (%)										ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG			DESC	RIPT	ion ane	) CLASS	SIFICATION
		$\otimes$											N		COL		SILT	Y SA	ND (SN	1); light	t yellowish
-	_	$\otimes$											$ \{$		brow	n (10YR lastic	: 5/4); I	mois	t; mostly	/ fine S	AND; litte fines;
		$\otimes$	B1									COR	K		nonp	140110.					
F	-	$\bigotimes$											$ \rangle$			UEROS		SES		IFFER	<u>ENTIATE</u> D
-	-	$\bigotimes$											115		SED	IMENTA	RY R0	CK	(Silty Sa	andstor	ne); medium
		$\otimes$	B2										K.		grain	ed; light	yellow	vish k		0YR 6/	(4); moderately to
Γ													K		mois	t; mostly	fine S	SAND	; little fi	nes; no	nplastic;
5	595	$\times$	S3	80/4"	80/4"	>100									mode	erately c	ement	ed; s	lightly n	nicaceo	us).
													$\left  \left\{ \right\} \right $		-Oliv	e gray (5	5Y 5/2)	)			
													1								
-	-												K								
_																		- — - TED			
		$\sim$	В4									PA PI	Ιζ[		(Clay	stone); t	fine gr	ained	d; dark g	grayish	brown (10YR
-	-												K		4/2);	modera	tely we	eathe	ered; vei	y soft;	(FAT CLAY with
10	590		С.E	80/6"	00/6"	>100									] plast	icity).	moist,	mos	uy intes	, nue n	ne SAND, nign
		$\square$	35	00/0	00/0	>100							51		<u>10% (</u>	Gravel, 1	<u>8% Sa</u>	and, 8	32% Fin	es	
-	_														POO (San iron o (CLA SAN perce	RLY-INI dstone); oxide sta YEY SA D; some entage w	DURA mediu aining; ND (S fines; vith de	TED Im gr mod iC); v med pth).	SEDIMI rained;b erately very den lium pla	ENTAR rown (1 weathei se; moi sticity; i	Y ROCK 0YR 4/2) with red; very soft; st; mostly fine ncreasing sand
<u>i</u> _15	585														<u>NOT</u>	<u>ES</u> :					
5															1. Bo	ttom of	excava	ation	at 10.5	feet be	low ground
3	_														SU 2 Fx	rface. cavatior	n termi	nate	d at tarc	let dent	h
															3. Gr	oundwa	ter not	ence	ountere	d during	g drilling.
															4. Th   the C	is Boring	g Reco Soil &I	ord w Rock	as prep Logain	ared in a. Class	accordance with sification, and
2	<b>–</b>														Pres	entation	Manua	al (20	2099 <sup>11</sup> 010).	, 5.430	
	-																				
_20 _580																					
i –	-																				
-	L																				
	-																				
2-	<u> </u>																				
GRD	IUP	~		ום הב	I T A	CON	2111	т^			THIS	SUMN	IARY	APPLIES	ONLY	AT THE	LOCA		1	г	
								5	OF TH	IIS BC URFA		G AND AT	THE NS MA	TIME OF	DRILL ER AT (	ING. DTHF		F	IGURE		
*		3	2 Ma	uchly	/, Su	ite B					LOCA	TIONS	S ANI	D MAY CI	HANGE		S LOC	ATIO	N		A 4
		lr	vine	CAS	9261	8					PRES		DIS	AGE OF	FICAT		THE AC	TUA	L		A-4
GROUP DELTA CONSULTANTS 32 Mauchly, Suite B Irvine, CA 92618								s	THIS S OF TH SUBS LOCA WITH PRES CONC	SUMM IIS BC URFA THE F ENTE DITION	IARY DRING CE C S ANI PASS D IS A	APPLIES 3 AND AT ONDITIC 0 MAY CI AGE OF A SIMPLI ICCUINT	S ONLY THE DNS M/ HANGE TIME. FICAT ERED	AT THE TIME OF AY DIFFE AT THIS THE DA ION OF 1	E LOCA DRILL ER AT ( S LOC/ TA FHE AC	TION ING. DTHE ATIOI	I FR N L	F	FIGURE A-4		

APPENDIX B LABORATORY TESTING

Page B-1



COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND
GRAVEL			SAND		CLAY

SAMPLE: B-1	UNIFIED SOIL CLASSIFICATION: SC	ATTERBERG LIMITS
SAMPLE NUMBER: R2-2		LIQUID LIMIT:
SAMPLE DEPTH: 5.5'	DESCRIPTION: CLAYEY SAND	PLASTIC LIMIT:
		PLASTICITY INDEX:



# SOIL CLASSIFICATION





SAMPLE B-2	UNIFIED SOIL CLASSIFICATION: CL	ATTERBERG LIMITS
SAMPLE NUMBER: R3-1		LIQUID LIMIT: 49
SAMPLE DEPTH: 5.5'	DESCRIPTION: SANDY LEAN CLAY	PLASTIC LIMIT: 18
		PLASTICITY INDEX: 31

**GROUP DELTA** 



Laboratory No. SO5795

SOIL CLASSIFICATION

Project No. IR742

FIGURE B-1.2



# SOIL CLASSIFICATION

Laboratory No. SO5795 Project No. IR742

FIGURE B-1.3

SC ATTERBERG LIMITS LIQUID LIMIT: 37 PLASTIC LIMIT: 19 PLASTICITY INDEX: 18

COARSE	FINE	COARSE	MEDIUM	FINE	SILT AN	ND
GRAVE	L		SAND		CLAY	/
sample B-2		UNIFIED SO	IL CLASSIFICATION:	SC		ATTERBERG LIMITS

DESCRIPTION: CLAYEY SAND



SAMPLE NUMBER: S4

SAMPLE DEPTH: 10' - 11.5'



# SOIL CLASSIFICATION

Laboratory No. SO5795 Project No. IR742

FIGURE B-1.4

sample B-3	UNIFIED SOIL CLASSIFICATION: CH	ATTERBERG LIMITS
SAMPLE NUMBER: B4		LIQUID LIMIT: 57
SAMPLE DEPTH: 8'	DESCRIPTION: FAT CLAY WITH SAND	PLASTIC LIMIT: 25
		PLASTICITY INDEX: 32

COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND
GRAVE	L		SAND		CLAY



### ASTM D-4318 / AASHTO T-89 / CTM 204

Project Name:	Peters Canyon Bikeway	Tested By :	EY	Date:	08/07/20
Project No. :	IR742	Data Input By:	EY	Date:	08/10/20
Boring No.:	B-1	Checked By:	SN	Date:	08/14/20
Sample No. :	S5	Depth (ft.) :	15		
Initial Moisture:		Container No.:	AL-1	_	
Description .:	Reddish Brown Clayey Sand - S	SC		_	

	PLASTIC LIMIT		LIQUID LIMIT			
TEST NO.	1	2	1	2	3	4
Number of Blows [N]			33	25	18	
Container No.	1	2	3	4	5	
Wet Wt. of Soil + Cont. (gm.)	32.27	32.04	38.82	40.37	41.56	
Dry Wt. of Soil + Cont. (gm.)	31.44	31.21	35.63	36.83	37.68	
Wt. of Container (gm.)	25.50	25.28	25.78	26.34	26.65	
Moisture Content (%) [Wn]	13.97	14.00	32.39	33.75	35.18	

## LIQUID LIMIT PLASTIC LIMIT PLASTICITY INDEX





PI at "A" - Line = 0.73(LL-20) =

One - Point Liquid Limit Calculation

LL=Wn(N/25)<sup>0.121</sup>





### ASTM D-4318 / AASHTO T-89 / CTM 204

Project Name: Peters Canyon Bikeway	Tested By :	EY	Date:	08/07/20
Project No. : IR742	Data Input By:	EY	Date:	08/10/20
Boring No.: B-2	Checked By:	SN	Date:	08/14/20
Sample No. : R3-1	Depth (ft.) :	5.5		
Initial Moisture:	Container No.:	AL-2	-	
Description .: Dark Brown Sandy Lean Clay - CL			-	

PLASTIC LIMIT LIQUID LIMIT TEST NO 1 2 1 2 3 4 Number of Blows 34 25 18 [N] Container No. 6 7 8 9 10 39.14 Wet Wt. of Soil + Cont. (gm.) 32.71 32.97 36.95 39.82 Dry Wt. of Soil + Cont. (gm.) 33.00 34.93 31.71 31.95 34.92 Wt. of Container 26.00 26.13 24.52 26.22 25.23 (gm.) Moisture Content (%) [Wn] 17.53 46.58 50.41 17.51 48.51

## LIQUID LIMIT PLASTIC LIMIT PLASTICITY INDEX





PI at "A" - Line = 0.73(LL-20) =

One - Point Liquid Limit Calculation

 PROCEDURES USED
 Wet Preparation Multipoint Wet Preparation
 Dry Preparation Multipoint Dry Preparation
 Procedure A Multipoint Test
 Procedure B One-point Test

> GROUP DELTA CONSULTANTS 1320 South Simpson Circle Anaheim, CA 92806 (714) 660-7500 office (714) 660-7550 fax

GROUP

DELTA

52.0 51.0 **MOISTURE CONTENT (%)** 50.0 49.0 48.0 47.0 46.0 45.0 44.0 43.0 15 60 70 80 90 100 10 20 25 30 35 40 50 NUMBER OF BLOWS

LL=Wn(N/25)<sup>0.121</sup>

53.0

### ASTM D-4318 / AASHTO T-89 / CTM 204

Project Name: Peters Canyon Bikeway	Tested By :	EY	Date:	08/07/20
Project No. : IR742	Data Input By:	EY	Date:	08/10/20
Boring No.: B-2	Checked By:	SN	Date:	08/14/20
Sample No. : S4	Depth (ft.) :	10' - 11.5'		
Initial Moisture:	Container No.:	AL-3		
Description.: Brown Clayey Sand - SC	-			

	PLASTIC LIMIT			LIQUID LIMIT			
TEST NO.	1	2	1	2	3	4	
Number of Blows [N]			31	25	19		
Container No.	11	12	13	14	15		
Wet Wt. of Soil + Cont. (gm.)	31.43	32.33	39.84	38.81	39.78		
Dry Wt. of Soil + Cont. (gm.)	30.37	31.24	36.50	35.08	35.87		
Wt. of Container (gm.)	24.71	25.44	27.07	24.92	25.69		
Moisture Content (%) [Wn]	18.73	18.79	35.42	36.71	38.41		

### LIQUID LIMIT PLASTIC LIMIT PLASTICITY INDEX



LL=Wn(N/25)<sup>0.121</sup>

60 Classification of fine-grained & fine-grained fraction Plasticity Index (PI) 50 CH or OH of soils 40 30 CL or OL 20 MH or OH 10 ML or OL 0 20 40 50 70 90 100 110 10 30 60 80 0 Liquid Limit (LL)

PI at "A" - Line = 0.73(LL-20) =

One - Point Liquid Limit Calculation

 PROCEDURES USED
 Wet Preparation Multipoint Wet Preparation
 Dry Preparation Multipoint Dry Preparation
 Procedure A Multipoint Test
 Procedure B One-point Test

GROUP DELTA CONSULTANTS 1320 South Simpson Circle Anaheim, CA 92806 (714) 660-7500 office (714) 660-7550 fax

DELTA

42.0 41.0 40.0 **MOISTURE CONTENT (%)** 39.0 38.0 37.0 36.0 35.0 34.0 33.0 32.0 15 60 70 80 90 100 10 20 25 30 35 40 50 NUMBER OF BLOWS

# 0.73(LL-20) = **12.4**

### ASTM D-4318 / AASHTO T-89 / CTM 204

Project Name: Peters Canyon Bikeway	Tested By :	EY	Date:	08/10/20
Project No. : IR742	Data Input By:	EY	Date:	08/11/20
Boring No.: B-3	Checked By:	SN	Date:	08/14/20
Sample No. : <i>B4</i>	Depth (ft.) :	8'		
Initial Moisture:	Container No.:	AL-4	-	
Description .: Dark Grayish Brown Fat Clay - CH			-	

	PLASTIC LIMIT		LIQUID LIMIT			
TEST NO.	1	2	1	2	3	4
Number of Blows [N]			33	25	18	
Container No.	16	17	18	19	20	
Wet Wt. of Soil + Cont. (gm.)	31.67	31.18	39.28	40.19	39.37	
Dry Wt. of Soil + Cont. (gm.)	30.34	29.86	34.81	35.24	33.84	
Wt. of Container (gm.)	25.03	24.60	26.72	26.60	24.53	
Moisture Content (%) [Wn]	25.05	25.10	55.25	57.29	59.40	

## LIQUID LIMIT PLASTIC LIMIT PLASTICITY INDEX





PI at "A" - Line = 0.73(LL-20) =

One - Point Liquid Limit Calculation

 PROCEDURES USED
 Wet Preparation Multipoint Wet Preparation
 Dry Preparation Multipoint Dry Preparation
 Procedure A Multipoint Test
 Procedure B One-point Test

GROUP DELTA CONSULTANTS 1320 South Simpson Circle Anaheim, CA 92806 (714) 660-7500 office (714) 660-7550 fax  $LL=Wn(N/25)^{0.121}$ 



Page B-9



Page B-10





### **EXPANSION INDEX OF SOIL** ASTM D-4829-10 / UBC 29-2

Lab Number: SO5795

Project Name	: Peters Canyon Bikeway
Project No.	: <u>IR742</u>
Boring No.	: B-1

: *B*-1

: <mark>B1</mark> Sample No.

Depth (ft.) : 0 - 5 Description

: Yellowish Brown Clayey Sand and Silty Sand

Sampled By : <u>SN</u>	Date : 7/21/2020
Prepared By : <u>EY</u>	Date : 8/4/2020
Tested By : EY	Date : 8/5/2020
Calculated By : <b>EY</b>	Date : 8/10/2020
Checked By : SN	Date : 8/14/2020
	-

1 Sample Preparation 1							
Weight of Total Soil 3242.40 We	ight of Soil	Retained o	n No. 4 Siev	e 91	.40	% Passing No. 4 Sieve	97.18
Trail	1	2	3	4	Tested	M & D After	r Test
Container No.	SP-2					Container No.	
Weight of Wet Soil + Container (gm)	765.64					Wet Soil+Cont.+Ring	
Weight of Dry Soil + Container (gm)	716.68					Dry Soil+Cont.+Ring	
Weight of Container (gm)	180.56					Wt. of Container	
Moisture Content (%)	9.13				9.13	Moisture Content	
Weight of Wet Soil + Ring (gm)	611.48						
Weight of Ring (gm) No. 3.0	200.90				200.90		
Weight of Wet Soil (gm)	410.58						
Wet Density of Soil (pcf)	123.85					Wet Density (pcf)	
Dry Density of Soil (pcf)	113.48					Dry Density (pcf)	
$\label{eq:precent_status} \textbf{Precent Saturation of Soil} \qquad \textbf{S}_{(Meas.)}$	50.81				50.81	(%) Saturation	

Loading Machine No.				3
Date	Reading Time	Elapsed Time	Dial Reading	Expansion
08/05/20	13:50:00	0:10:00		0.0000
08/05/20				
08/05/20	14:00:00	0:00:00	0.2000	0.0000
	Add Dist	illed Wate	r to Sampl	le
08/05/20	15:00:00	1:00:00	0.2095	0.0095
08/05/20	16:00:00	2:00:00	0.2098	0.0098
08/05/20	17:00:00	3:00:00	0.2100	0.0100
08/06/20	8:00:00	18:00:00	0.2106	0.0106
08/06/20	9:00:00	19:00:00	0.2106	0.0106
08/06/20	10:00:00	20:00:00	0.2106	0.0106
08/06/20	14:00:00	24:00:00	0.2106	0.0106
Remark :				

1. Screen sample through	No.	4	Sieve
--------------------------	-----	---	-------

> 130

2. Sample should be compacted into a metal ring of the Degree

of Saturation of 50 + / - 2% (48 - 52).

<sup>3.</sup> Inundated sample in distilled water to 24 h, or until the rate of expansion > (0.0002 in./h), no less than 3 h.

Volume of Mold (ft <sup>3</sup> )	0.00731	Specific Gravity	2.70		
Rammer Weight (lb.)	5.0	Blows/Layer	15		
Vertical Confining Pr	<b>nfining Pressure</b> $1.0 (lbf/in^2) / 6.9 (kPa)$				
(%) $\mathbf{S} = \frac{\mathbf{S.G.} \times \mathbf{W} \times \mathbf{Dd}}{\mathbf{Wd} \times \mathbf{S.G.} \cdot \mathbf{Dd}}$	S.G Dd=I	S.G.=Specific Gravity, W=Water Content Dd=Dry Soil Density, Wd=Unit Wt. of Water			
E.I. <sub>(meas)</sub> = Cha Initia	nge in Higl al Thicknes	n SS X 1000 =	10.60		

$\mathbf{Expansion} \; \mathbf{Index}_{(50)} = \mathbf{EI}_{(50)}$	$(50 - S_{(meas.)}) \times \frac{65 + EI_{(meas.)}}{220 - S_{(meas.)}}$
11	Very Low
Expansion Index	Potential Expansion
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium

Very High

### CORROSIVITY TEST RESULTS (ASTM D516, CTM 643)

		RESISTIVITY	SULFATE	CHLORIDE
SAMPLE	рп	(OHM-CM)	CONTENT (%)	CONTENT (%)
B-5 @ 0-3'	7.89	4,722	< 0.01	< 0.01



GROUP DELTA CONSULTANTS 1320 South Simpson Circle Anaheim, CA 92806 (714) 660-7500 office (714) 660-7550 fax

Project Name: Peters Canyon Bikeway Project Number: IR742 Figure Number: B-5

APPENDIX C EXISTING INFORMATION Page C-1

Mark Thomas– Project Plans 30% Design



# **County of Orange** CPublicWorks

SANTA ANA, CALIFORNIA JAMES TREADAWAY, DIRECTOR

# PROJECT PLANS FOR CONSTRUCTION OF

PIONEER ROAD FROM: PIONEER WAY **TO: JAMBOREE ROAD** 

JAMBOREE ROAD FROM: PIONEER ROAD **TO: CANYON VIEW AVENUE** 

# AUGUST, 2020 **DESIGN FUNDED BY: ATP** MAINTAINED BY: COUNTY OF ORANGE

30% DESIGN NOT FOR CONSTRUCT

PREPARED BY PREPARED UNDER RESPONSIBLE CHARGE OF MARK **B B** THOMAS

	SHEET	REFERENCE	DESCRIPTION
	3		TITLE SHEET
	2	TS-01	TYPICAL SECTIONS
	3-8	C-01 - C-06	ROADWAY IMPROVEMENTS
	9-16	ST-01 - ST-08	ROADWAY PLAN & PROFILE
		OWNER PHC	NE NO. <u>CONTACT</u>
	UTILITY TO BE PROVID	OWNER PHO DED BY COUNTY	<u>DNE NO.</u> <u>CONTACT</u>
	UTILITY TO BE PROVID	OWNER DED BY COUNTY	NE NO. CONTACT
	UTILITY TO BE PROVID TO BE PROVID	OWNER DED BY COUNTY DED BY COUNTY DED BY COUNTY SUBJECT DED BY COUNTY DED BY COUNTY SUBJECT DED BY COUNTY DED BY COUNTY SUBJECT DED	DNE NO.       CONTACT         ONE NO.       CONTACT         Structure       Structure         Structure       <
	UTILITY TO BE PROVID TO BE PROVID	OWNER DED BY COUNTY DED BY COUNTY DED BY COUNTY MED SK STAMPED THE NORTHEATERLY THE SIDEWALK.	DNE NO. CONTACT
SN	UTILITY TO BE PROVID TO BE PROVID	OWNER DED BY COUNTY DED BY COUNTY DED BY COUNTY	DNE NO.       CONTACT         ONE NO.       CONTACT         Support       Support
NC	UTILITY TO BE PROVID TO BE PROVID	OWNER DED BY COUNTY DED BY COUNTY	DNE NO.       CONTACT         ONE NO.       CONTACT         Support       Support
	UTILITY TO BE PROVID	OWNER DED BY COUNTY PHO DED BY COUNTY PHO DED BY COUNTY PHO DESCRIPTION	DNE NO.       CONTACT         DNE NO.       CONTACT         Support       Support         Support       Support       Support </td
	UTILITY TO BE PROVID	OWNER DED BY COUNTY PHO DED BY COUNTY PHO DESCRIPTION PHO PHO PHO PHO PHO PHO PHO PHO PHO PHO	DNE NO.       CONTACT         DNE NO.       CONTACT         Structure       Structure         DIME NO.       CONTACT         Structure       Structure         DIME NO.       CONTACT         Structure       Structure



GRAPHIC SCALE 1" = 40'











- DASHED GREEN PAVEMENT ENHANCEMENT AND CORRESPONDING EDGE LINES, PER CITY STD. DETAILS.
- 2. BUFFERED BIKE LANE DIAGONAL STRIPING PER CITY STD. DETAILS.

# CONSTRUCTION NOTES

(6) INSTALL BIKE LANE BUFFER STRIPING. WIDTH PER PLAN (7) MAINTAIN EXISTING STRIPING AND PAVEMENT MARKINGS.

> GRAPHIC SCALE 1" = 40'

INSTALL BIKE LANE CONFLICT (BROKEN) STRIPING, LENGTH PER PLAN







PIONEER ROAD



# **30% DESIGN - NOT FOR CONSTRUCTION**

55+00

5

50.00

DR

AND

BR

 DASHED GREEN PAVEMENT ENHANCEMENT AND CORRESPONDING EDGE LINES, PER CITY STD. DETAILS. BUFFERED BIKE LANE DIAGONAL STRIPING PER CITY STD. DETAILS.

# CONSTRUCTION NOTES

(6) INSTALL BIKE LANE BUFFER STRIPING. WIDTH PER PLAN (7) MAINTAIN EXISTING STRIPING AND PAVEMENT MARKINGS. INSTALL BIKE LANE CONFLICT (BROKEN) STRIPING, LENGTH PER PLAN

 $\frac{GRAPHIC SCALE}{1" = 40'}$ 





DASHED GREEN PAVEMENT ENHANCEMENT AND CORRESPONDING EDGE LINES, PER CITY STD. DETAILS.

2. BUFFERED BIKE LANE DIAGONAL STRIPING PER CITY STD.

# CONSTRUCTION NOTES

(6) INSTALL BIKE LANE BUFFER STRIPING. WIDTH PER PLAN (7) MAINTAIN EXISTING STRIPING AND PAVEMENT MARKINGS. INSTALL BIKE LANE CONFLICT (BROKEN) STRIPING, LENGTH PER PLAN

GRAPHIC SCALE 1" = 40'





# NOTES: DETAILS.





# **30% DESIGN - NOT FOR CONSTRUCTION**





# NOTES:

- DETAILS.

# CONSTRUCTION NOTES



DASHED GREEN PAVEMENT ENHANCEMENT AND CORRESPONDING EDGE LINES, PER CITY STD. DETAILS.

2. BUFFERED BIKE LANE DIAGONAL STRIPING PER CITY STD.

(6) INSTALL BIKE LANE BUFFER STRIPING. WIDTH PER PLAN (7) MAINTAIN EXISTING STRIPING AND PAVEMENT MARKINGS. (8) INSTALL GREEN BIKE LANE PAVEMENT MARKINGS.

 $\frac{GRAPHIC SCALE}{1" = 40'}$ 

INSTALL BIKE LANE CONFLICT (BROKEN) STRIPING, LENGTH PER PLAN









![](_page_426_Figure_0.jpeg)

4 5

![](_page_427_Figure_0.jpeg)

TOTA		123+00	122+00	121+00	0+00
_					
_					
590					
_	_				
600	MATC				
_	HLIN				
610	E - SI				
610	L S				
			L=332.41		
620	5		H=5'		
_					
630					
-					
_					
640					

![](_page_427_Figure_3.jpeg)

![](_page_428_Figure_0.jpeg)

![](_page_429_Figure_0.jpeg)

1. FOR RIGHT OF WAY REQUIRED, SEE RIGHT OF WAY IMPACT EXHIBIT. 2. FOR UTILITY INFORMATION, SEE UTILITY IMPACT EXHBIT.

# CONSTRUCTION NOTES

3 CONSTRUCT 4" PCC SIDEWALK/BIKEWAY, WIDTH PER PLAN.

(4) CONSTRUCT GRAVITY RETAINING WALL, HEIGHT PER PLAN.

(5) INSTALL PEDESTRIAN FENCING, 42" HIGH.

# LEGEND

PROP LANDSCAPE RESTORATION AREA PROP CONCRETE BIKEWAY RIGHT OF WAY - - - c- - - F- CUT/FILL LINES

EXIST TREE TO BE REMOVED

 $\boxtimes$ 

Tange     DESIGNED BY:       range     AV       range     AV       DRAWN     EHECKED       BY:     BY:       DRAWN     BY:       DRAWN     BY:       DRAWN     BY:       DRAWN     BY:       DRAWN     BY:       PB     AV       DRAWNG NO:     AV       DRAWING NO:     AV       ViewTitle     AV       MAS     FILE NAME:       R-20113 SHT 14_C-12 dwg       Mass     SCALE:       Wednesday.     SCALE:       Meduesday.     As SHOWN
Tange     AV       AV     AV       Orks     AV       BY:     BY:       BY:     BY:       DRAWN     BY:       BY:     BY:       DRAWN     BY:       BY:     BY:       BY:     BY:       BY:     BY:       BY:     BY:       BY:     BY:       BY:     BY:       PB     AV       BY:     AV       BY:     BY:       AN     BY:       FILE NAME:     SCALE:       Wednesday.     AS SHOWN       August 05, 2020     AS SHOWN
range designed BY: range <u>Av</u> orks <u>Pa</u> prawing no: ViewTitle FILE NAME: R-20113 SHT 14 Vednesday, Vednesday, Vednesday, Vednesday, August 06, 2020
range orks MAS
of O blicW Y HO

OF

![](_page_429_Figure_12.jpeg)

![](_page_430_Figure_0.jpeg)

1. FOR RIGHT OF WAY REQUIRED, SEE RIGHT OF WAY IMPACT EXHIBIT. 2. FOR UTILITY INFORMATION, SEE UTILITY IMPACT EXHBIT.

# CONSTRUCTION NOTES

(1) PROTECT IN PLACE. ITEM PER PLAN.

CONSTRUCT 4" PCC SIDEWALK/BIKEWAY, WIDTH PER PLAN.

(5) INSTALL PEDESTRIAN FENCING, 42" HIGH.

PROP LANDSCAPE RESTORATION AREA PROP CONCRETE BIKEWAY

l FOS AS MARK THOM 28 문문 정 County of Orange MARK 4 ROAD JAMBOREE ROAD BIKEWAY IMPROVEMENTS PETERS CANYON BIKEWAY EXTENSION SHEET C-13

15 OF 16

OF

![](_page_430_Figure_12.jpeg)

![](_page_431_Figure_0.jpeg)

								NOTES:
								1 FOF
								SEE
							610	2. FOF
								SE
								CON
		-					600	(1) PRO
								CON:
							-2222	WID WID
						-	590	
								CON:
							500	
						-	080	
		~~						
							570	
						-	- 5/ 0	
								<u></u>
							560	
								2
152+	-00	153+	00				TOTAL	

OR RIGHT OF WAY REQUIRED, E RIGHT OF WAY IMPACT EXHIBIT. OR UTILITY INFORMATION, EE UTILITY IMPACT EXHBIT.

# **ISTRUCTION NOTES**

OTECT IN PLACE. ITEM PER PLAN

MOVE ITEM PER PLAN

NSTRUCT 4" PCC SIDEWALK/BIKEWAY, DTH PER PLAN.

NSTRUCT CURB RAMP, 8' WIDE

# EGEND

PROP LANDSCAPE RESTORATION AREA PROP CONCRETE BIKEWAY ---R/W------ RIGHT OF WAY 

EXIST TREE TO BE REMOVED

 $\boxtimes$ 

PETERS CANYON BIKEWAY EXTENSION     DESIGNED BY:       BIKEWAY EXTENSION     County of Orange       BIKEWAY EXTENSION     County of Orange       JAMBOREE ROAD     DRAWING NO:       JAMBOREE ROAD     DRAWING NO:       BIKEWAY     DRAWING NO:       JAMBOREE ROAD     DRAWING NO:       BIKEWAY     DRAWING NO:       IMPROVEMENTS     MARK       MARK     PRAMING NO:       MARK <td< th=""><th>PETERS CANYON       DESIGNED BY:         BIKEWAY EXTENSION       County of Orange       Designed BY:         JAMBOREE ROAD       DAMIN       Designed BY:         JAMBOREE ROAD       DENT       DEAMIN         JAMBOREE ROAD       DESIGNED BY:       DEAMIN         JAMBOREE ROAD       DEAMIN       DEAMIN         JAMBOREE ROAD       DEAMIN       DEAMING NG:         JAMBOREE ROAD       DEAMING NG:       DEAMING NG:         MARK       DEAMING NG:       NGARK         MARK       DEAMING NG:       NGARK         MARK       NGARK       NGARK         MARK       NGARK       NGARK</th><th>PETERS CANYON BIKEWAY EXTENSION     DESIGNED BY:       PETERS CANYON     DESIGNED BY:       BIKEWAY EXTENSION     Designed BY:       JAMBORE ROAD     Distriction       Distriction     Distriction       JAMBORE ROAD     Distriction       JAMBORE ROAD     Distriction       JAMBORE ROAD     Distriction       Distriction     Distriction       Distriction     Distriction       Distriction     Distriction       Distriction     Distriction       Distriction     Distriction       Distriction     Distriction       Distriction    &lt;</th><th>PETERS CANYON BIKEWAY EXTENSION     DESIGNED BY:       BIKEWAY EXTENSION     Designed BY:       JAMBOREE ROAD     Designed BY:       DAMBOREE ROAD     Designed</th><th></th><th>SH</th><th>EET</th><th></th><th></th></td<>	PETERS CANYON       DESIGNED BY:         BIKEWAY EXTENSION       County of Orange       Designed BY:         JAMBOREE ROAD       DAMIN       Designed BY:         JAMBOREE ROAD       DENT       DEAMIN         JAMBOREE ROAD       DESIGNED BY:       DEAMIN         JAMBOREE ROAD       DEAMIN       DEAMIN         JAMBOREE ROAD       DEAMIN       DEAMING NG:         JAMBOREE ROAD       DEAMING NG:       DEAMING NG:         MARK       DEAMING NG:       NGARK         MARK       DEAMING NG:       NGARK         MARK       NGARK       NGARK         MARK       NGARK       NGARK	PETERS CANYON BIKEWAY EXTENSION     DESIGNED BY:       PETERS CANYON     DESIGNED BY:       BIKEWAY EXTENSION     Designed BY:       JAMBORE ROAD     Distriction       Distriction     Distriction       JAMBORE ROAD     Distriction       JAMBORE ROAD     Distriction       JAMBORE ROAD     Distriction       Distriction     Distriction       Distriction     Distriction       Distriction     Distriction       Distriction     Distriction       Distriction     Distriction       Distriction     Distriction       Distriction    <	PETERS CANYON BIKEWAY EXTENSION     DESIGNED BY:       BIKEWAY EXTENSION     Designed BY:       JAMBOREE ROAD     Designed BY:       DAMBOREE ROAD     Designed		SH	EET		
County of Orange     Designed BY:       County of Orange     A       County of Orange     A       OC     BY:       Designed BY:       PREPARED BY:	Designed BY:     Designed BY:       County of Orange     Designed BY:       County of Orange     Designed BY:       OCPUblicWorks     Designed BY:       PREPARED BY:     Designed BY:       PREPARED BY:     Designed BY:       Name     Designed BY:       Prepared BY:     Designed BY:       OCPUBLICWorks     Designed BY:       Prepared BY:     Designed BY:       Prepared BY: <th>County of Orange     Designed BY:       County of Orange     AL       County of Orange     AL       OC     Drawn       OC     Drawn       OC     Drawn       Drawn     CHECKED       PREPARED BY:     Drawn       PREPARED BY:     Drawn       PREPARED BY:     Drawns No.:       Prepared BY:       Prepared BY:</th> <th>Designed Bit     Designed Bit       County of Orange     A       County of Orange     A       OC     Distant       OC     Distant       OC     Distant       Distant     Distant       OC     Distant       Distant     Distant       OC     Distant       Distant       Distant</th> <th>PETERS CANYON BIKEWAY EXTENSION</th> <th></th> <th>JAMBOREE ROAD</th> <th>IMPROVEMENTS</th> <th></th>	County of Orange     Designed BY:       County of Orange     AL       County of Orange     AL       OC     Drawn       OC     Drawn       OC     Drawn       Drawn     CHECKED       PREPARED BY:     Drawn       PREPARED BY:     Drawn       PREPARED BY:     Drawns No.:       Prepared BY:       Prepared BY:	Designed Bit     Designed Bit       County of Orange     A       County of Orange     A       OC     Distant       OC     Distant       OC     Distant       Distant     Distant       OC     Distant       Distant     Distant       OC     Distant       Distant       Distant	PETERS CANYON BIKEWAY EXTENSION		JAMBOREE ROAD	IMPROVEMENTS	
DESIGNED BY: <u>AV</u> <u>AV</u> <u>DRAWIN</u> BY: <u>BP</u> <u>BY</u> : <u>BY</u> : <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u>	DESIGNED BY: <u>AN</u> <u>AN</u> <u>BRAWN</u> <u>BY</u> : <u>BRAWN</u> <u>BY</u> : <u>BRAWN</u> <u>BY</u> : <u>BRAWNG NO:</u> <u>VIEWTILE</u> <u>PB</u> <u>AN</u> <u>AN</u> <u>PREPARED BY:</u> <u>AN</u> <u>PREPARED BY:</u> <u>AN</u> <u>PREPARED BY:</u> <u>AN</u> <u>AN</u> <u>PREPARED BY:</u> <u>AN</u> <u>AN</u> <u>PREPARED BY:</u> <u>AN</u> <u>PREPARED BY:</u> <u>AN</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BY:</u> <u>BREAWING NO:</u> <u>VIEWTILE</u> <u>BY:</u> <u>CALE:</u> <u>PREPARENT BY:</u> <u>CALE:</u> <u>ANDED BY:</u> <u>ANDED BY</u>	DESIGNED BY: AV DRAWN BY: BY: BY: BY: BY: BY: BY: BY:	DESIGNED BY: A A DRAWIN BY: BY: BY: BY: BY: DRAWING NO.: View Title CALE: R.20113 SHT 16_C-14 dwg FILE NAME: R.20113 SHT 16_C-14 dwg R.C MARK CALE: R.20113 SHT 16_C-14 dwg R.C MARK DESCRIPTION DATE:	County of Orange	<b>OC</b> PublicWorks	PREPARED BY:	MARK	
PREPARED BY: MARK MARK MARK MARK MARK	FIEPARED BY: FIE MARK FIE THOMAS OT-31-20 MARK	PREPARED BY: W MARK M M A R K M M A R K 07-31-20 MARK DESCRIPTION	PREPARED BY: REPARED BY: MAR K 07:31:20 07:31:20 MARK DESCRIPTION DATE	DESIGNED BY: AV	BY: BY: PB AV	DRAWING NO.: View Title	FILE NAME: IR-20113 SHT 16_C-14.dwg	PLOT DATE: SCALE: Wednesday, As SHOWN Auoust 05, 2020
	MARK	MARK DESCRIPTION	MARK DESCRIPTION DATE			<b>MARK</b>	I THOMAS	07-31-20

OF

![](_page_431_Figure_15.jpeg)
Pacific Soils Engineering, Inc. (1987) – Geologic Mapping (Jamboree Road Improvements)











ST. SOPT		1	DAT
RAFIC			SCALL
BENCH	MARK :	SEE	SHE

7	AMBOR	EE	ROF
n	STA : 32:2400.00	0 TO ST	9:334+a
01	ED : CITY ENGINEE	APPR	20 <i>1EO</i> :
RIT	F.B.		SHEET 4-
)			SP2









Leighton and Associates, Inc. (1997) – Geologic Mapping and Existing Data (Handy Creek Bridge)













A-1



CDMGS 12/12/96 HANDY

	CT NO STARTE R ID WAT	ER ELEV	94 C &	ET 1010-200 4/24/96 L Drillin ± 1000/5*1	<u>°C-10</u> D D G Rotary D	ATE FINISHED OGGED BY W DEPTH (FT) RIVE WT (LBS)	4/24/96 S. Malhotra 140 (Rope and Cathead)	BORING DESI STATION OFFSĔT (FT) GSE (FT) DROP (IN)	G	RW-564 2756+7 25' Lt 683.5 30	6 5 +	
DEPTH (FEET)	ELEVATION	SAMPLE TYPE AND NUMBER	BLOWS/FT OR REC/ROD	GRAPHIC LOG	ATTITUDES		GEOTECHNICAL DES	SCRIPTION	MOISTURE	DRY DENSITY (PCF)	SHEAR STRENGTH (PSF)	OTHER
		<u>S-9</u>	100/5*		· · · ·	CLAYST slightl	ONE to CLAYEY SILTSTO y moist, hard	DNE: greenish-grey,				
						BAC	TERMINATED AT 6 GROUNDWATER NOT N CKFILLED ON 4-24-96 WI	0.5 feet. IEASURED. TH BENTONITE.				
					•							
				-	•	•						
					•							
	-					$\begin{array}{c} \textbf{LEGENI}\\ \textbf{AL} = \textbf{At}\\ \textbf{CA} = \textbf{Ct}\\ \textbf{CC} = \textbf{Cc}\\ \textbf{CIU} = \textbf{Is}\\ \textbf{CN} = \textbf{Or}\\ \textbf{DS} = \textbf{Di}\\ \textbf{UC} = \textbf{Ur}\\ \textbf{UU} = \textbf{Ur} \end{array}$	2 terberg Limits nemical Analyses onfined Compression totropically Consolidated Tr ne-Dimensional Consolidation rect Shear neconfined Compression neonsolidated Undrained Tri	iaxial on axial				
SAMPI C S R	LE TYPE ROCK C SPLIT S DRIVE S	S: CORE POON CAMPLE	B B P PI b SI	ULK SAN TCHER S MALL BA	IPLE SAMPLE .G	SGW WHILE SGW PERCH B BEDDING P J JOINTING	DRILLING ED Ĉ CONTACT LANE F FAULT S SHEAR		EIGHT	ON IATI	ANI ES I	D N(

### BORING RW5553





PLATE A-1.118b

BORIN	G	RW	5553

₩ŒT\_<u>3\_</u> 0F \_4\_

PRO	ECT EAS	ST ORAN	GE INTEF	RCHANG	E ED . OS	2					•					
CON	TRACT NO.		F90 - 1	0								TIOP	AC			
DATE	STARTED	<u>N</u>	overnber 13	3 1990		DATE P	"NISHED	Nove	mber 13	3, 1990	STATION	HAND	DY CRE	<u>EK 1</u> :	31 + 2	0
			A & W	<u></u>	·····	LOGGE	D BY _		LS		OFFSET			0		_
TYPE			Botary V	J Nach		GW DE	- (II) HIT		18.5		GROUND	ELEV		658.	3	
					60	HOLE			5		DRIVE W	T/DROP +	<u>п16</u>	340 lbs	/ 12*	_
		SAMPH E TYPE DRIVE ENERGY	PLADEL	100 100	ATTRUDES	G E	OTEC	HNIC	AL	DESCR	IPTIC	N	COISTURE CONTENT (%)		OTHER TESTS	
المالية ال مالية المالية ال مالية المالية المالي		D 90 90				Han SILTY dam Harc	d layer SANDS p. grey d layer		ine grai	ned, modera	ately soft,		15.0	115		
-	ut TYPE:	-	ų, į			OW AFTER	MA HERE		PLANE S	- CONTACT	LAW/C	RAND	ALL.I	NC.	75	

PLATE A - 1.118c

فر وا

## BORING RW5553

84EET \_4 OF 4



PLATE A-1.118d

\$<sub>7</sub>







Page C-40



Hunsaker & Associates (1987) – Select Rough Grading Plans (Jamboree Road from City Boundary to Chapman Avenue)

# **ROUGH GRADING & STORM DRAIN PLANS** FOR: JAMBOREE ROAD FROM S'LY CITY BOUNDARY TO "NEW" CHAPMAN AVENUE



Page C-42

	CONSTRUCTION NO	125
	AND ESTIMATE QUAN	TITIES
	0:00	
	(A) CONSTRUCT DOWNDRAIN PER - it' SHELEMI IN ON	2 1903
	(B) CONSTRUCT TERRACE ONTH 152 UTY . 1. "3330 C'ETAL N'SH	3 4398
	(C) CONSTRUCT TERRACE ORAM. 18- " WILL LER ( SHI. ON 34 "	1905
	B (O) CONSTRUCT RID RAP PAR PER USING "" JM" 4	2060
	(E) DelStever Spirest da - Per institution - 4	97
	A (F) antorever attac. SPTR and " SIT . A "332 1. 4	• 5 1646
	G COUNTREET DOWN UKOAN F ME IK A SIGN SIGNY GO EN	
	- (R) METROV ALTER FOR DOM & AN IN STILL ON SH " 2	3
TKULEU	A CONSTRUCT PAVED SWALE BEHIND RET. WALL PER DETAIL SHT. 5	250
	(A) CONSTRUCT IN I Y JIL IS SILY I I -	- 3
irvide	(T) Datate OVERSA SLAAN IN	++
Alth A Com	(C) CONSTRUCT AND ARE OLEVA 500 1000	25
VILLE PLARK	(M) WILLET AN APROX WILET IS . SAIN IN SHEET LA C	3 4
/ WHITE ENTRANCE	W) CONSTRUCT 3" A C. OVER NATIVE	340
- CHAR	B (C) The Att The And I want the Att Contract of the Contract of the SHT.	3 7 2
SALL SALL	IN (P) RAISE EXIST MANWAY WITH ORAPE RIVES	
	A W. 18 1 10 16 99. 25044 . 5	403
D ''ON RD		
	A T CONST PAULO DEALAGE CHARE	
a l	CONST PAVED URAINAGE SWALC	316
/ w	A have any hard a pur rest for all of any	1500
Ш Ж	(V) CONSTRUCT LOWINDERMAN TO PERTURNELY MELT PORTURNELY ICT. S	<u>* 6 /</u>
ů,		
a a		1-201
		500
	KENTSTREETEN INTELET	a a a a a a a a a a a a a a a a a a a
L /	EEMATIE - STATE AL EL STATE	
CITY OF DRANGE BAUNDARY	REMARKEYIST 1, A COMMENT	
	RENT ' FALLIN', CO TE DITCH	2655
-1-47	Desale estatulo people popul	105/

EAi .	HWORK ?	PANTIN	I.F.S
	DESCRIPTICN	CUT	FILL
RAN	VOLUME		
SEE- SHE	ET 15 FALLMAIN MA		• · · · · · · · · · · · · · · · · · · ·
	5007.21		

NOTICE TO CONTHACTOR

THE INVITE RAN . MATER & STREET AND A STREET AND A FOR HUPELTATION DAYS PRICE TO ME TARA TO CONSTRUCTION OF IRWD. FALLITIE. A. .... 47. ...

# NOTICE TO CONTRACTOR:

CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS: AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER, THE ENGINEER, AND THE COUNTY OF ORANGE HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT. EXCEPTING FOR LIABILITY ARISING FROM SOLE NEGLIGENCE OF OWNER. ENGINEER, OR COUNTY OF ORANGE

# PRIVATE ENGINEER'S NOTICE TO CONTRACTOR:

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILI-TIES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO EXISTING UTILITIES EXCEPT THOSE SHOWN ON THIS PLAN. THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN, AND ANY OTHER LINES OR STRUCTURES NOT SHOWN ON THESE PLANS, AND IS RESPONSIBLE FOR THE PROTECTION OF AND ANY DAMAGE TO THESE LINES OR STRUCTURES.

	UA. L										
o no me arrice ociates, Inc.	FOR	ENGINEERS	USE	CIT	YOF	OR	ANGE				
ing · Surveying			NAME	DATE		ICE OF THE					
OMUY2 IN · LIYIN	n · /·/·/	DRAWN	LK	- JAN- 88							
A Later	S SHIDER	DESIGNED	LK	W-BC	7/7	ITLE OHEET					
de_ 11/19	0/8/	CHECKED	37	14 - B8	ROUGH	GRADIN	IG P	LAN			
CIVIL ENGINEER NO. 2	488	FOR	CITY USE O	NLY	TAME	BORE	5	POAD			
ONS			NAME	DATE	an taken share a di						
		STREETS		1	GOVERAX NOVES. VIC	MILY MAN, LE	640,00461	K'NOTES & QUANTITIES			
	AMPONEO	SEWER		1	APPROVED:		APPRUVEL.				
DQUANTITY	- <u> </u>	DRAINAGE			·' .						
LATURE BLOCK		WATER				,					
A . A-1 . A-2	1' + + + + + + + + + + + + + + + + + + +	ST. SUPT.			BATE	CITY ENGINEER	DATE				
NE "A-1" ¢ CHANGED		TRAFFIC			HORIZ: MORIZ:	—   FB	PC	SHEET OF SHEET			
	• . <del></del>				VERT:	' "					
TIPE IS SHEET ID Y 44		<u>B. M.</u>	5	EE J	EE7			SPZEZI			

7.14.89

TITLE SHEET / JANBOREE, ETC. / ORANGE - 347 10,23] PF: 12763 997 20-001-87 04:18 PM / 278-3-05











APPENDIX D SITE RECONNAISSANCE PHOTOGRAPHS



Looking northeast at engineered fill slope on eastern edge of Peters Canyon Regional Park along Jamboree Road.



Looking north along berm of engineered fill with Jamboree Road to the east and Peters Canyon Reigonal Park to the west



Looking east at MWD facility upslope from the southeast corner of Peters Canyon Road and Jamboree Road. Observed temporary water drainage release and associated erosion.



Looking south at existing retaining wall downslope of MWD facility that is planned to be protected in place. Water staining is observed on the wall and flush vegetation was present behind the wall.



Looking west at Peters Canyon Reservoir with vegetation rehabilitation in foreground from top of the northern slope approximately 500 feet south of the MWD facility



Looking north along Jamboree Road at the location of the end of the proposed retaining wall, beginning of the existing retaining wall and existing slope with the MWD facility upslope.

APPENDIX E CALCULATIONS




Page E-3







Page E-6







# Appendix E Paleontological Resources Assessment





## memorandum

date September 22, 2020

- to May Duong Project Management Orange County Public Works 601 North Ross Street Santa Ana, CA 92703
- from Monica Strauss and Russell Shapiro Environmental Science Associates
- subject Paleontological Resources Assessment for the Peters Canyon Bikeway Extension Project, Cities of Orange and Tustin, California

Orange County Public Works (OCPW) proposes to construct a Class I bike lane along a 1.15-mile stretch of Jamboree Road from Canyon View to Pioneer Road, and a Class II bike lane along a 1.55-mile stretch of Pioneer Road within the cities of Tustin and Orange, Orange County. The proposed project would connect the existing Peters Canyon Trail to Orange County's larger bikeway network and would include: the construction of a Class I multi-use bikeway and sidewalk along the west side of Jamboree Road; striping of 8-foot-wide buffered Class II bike lanes on both sides of Pioneer Road; installation of bike path wayfinding signage; and construction of retaining walls with V-ditches, tree removal, landscaping, drainage systems and decorative fence installations, utility relocation, and sidewalk removal along the west side of Jamboree Road.

An Initial Study Mitigated Negative Declaration (ISMND) is being prepared for the proposed project pursuant to the statutes of the California Environmental Quality Act (CEQA). OCPW is the lead agency under CEQA. The proposed project is also eligible for Bicycle Improvement Corridor Program (BCIP) funding and is therefore subject to review and approval by California Department of Transportation (Caltrans), District 12 as the lead agency under the National Environmental Policy Act (NEPA). 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 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016, and executed by the Federal Highway Administration (FHWA) and Caltrans.

This paleontological resources assessment was conducted to identify unique geological features and paleontological resources that could be impacted by proposed project activities and to assess the proposed project area's paleontological sensitivity. This assessment is based on a paleontological resources records search conducted by the Natural History Museum of Los Angeles County (LACM), as well as a review of geologic maps, relevant published, and available geotechnical data.

## **Project Location**

The proposed project is located in the cities of Tustin and Orange, within east-central Orange County (**Figure 1**). Specifically, the proposed project is located in unsectioned portions of Township 4 and 5 South, Range 8 and 9 West on the Orange, CA 7.5-minute topographic quadrangle (**Figure 2**). The proposed project is located along a 1.15-mile stretch of Jamboree Road from Canyon View to Pioneer Road, and a 1.55-mile stretch on Pioneer Road from Jamboree Road to Pioneer Way.

## **Project Description**

OCPW proposes to construct a Class I bike lane along Jamboree Road from Canyon View to Pioneer Road, and Class II bike lanes along Pioneer Road from Jamboree Road to Pioneer Way within the cities of Tustin and Orange, Orange County. The project proposes construction of a bike and pedestrian path that will connect the Peters Canyon Trail to existing bikeways at the intersections of Jamboree Road with Canyon View Avenue and Pioneer Road with Pioneer Way in the cities of Orange and Tustin. The project is located on Jamboree Road (between Canyon View Avenue and Pioneer Road) and proposes the construction of a Class I multi-use/combined bikeway along the west side (approximately 1.5 miles long).

Project features along Jamboree Road include:

- installation of bike path and bike lanes way finding signage;
- construction of an approximately 3 to 8-foot high retaining wall and/or grading to a maximum depth of 15 feet;
- relocation of utilities (water meters, high voltage electrical cabinets, pull boxes, valves boxes, fire hydrants, etc.);
- removal of mature trees to accommodate the proposed bike path width;
- replacement of existing irrigation system and landscape;
- and, installation of decorative fence along the west side of Jamboree Road.

In addition, the project includes intersection improvements at Jamboree Road and Pioneer Road to connect the existing Class II bike lane on the south side of the intersection to the proposed Class I bike lane along Jamboree Road. A striped 8-foot wide buffered Class II bike lane (approximately 1.55 miles) would be designated on both sides of Pioneer Road to Pioneer Way. No additional improvements are proposed along Pioneer Road.



SOURCE: ESRI



Peters Canyon Bikeway Extension Project

Figure 1 Regional Location



TOPO QUAD: Orange, Tustin, and Black Star Canyon, CA 7.5-minute

Peters Canyon Bikeway Extension Project



## Methods

This assessment includes a paleontological resources records search conducted by the LACM, as well as a review of geologic maps, and relevant published literature to identify unique geologic features and paleontological resources that may be impacted by proposed project ground disturbance and to assess the paleontological sensitivity of the proposed project area. The LACM records search results are included in **Appendix A**.

Paleontological sensitivity is defined as the potential for a geologic formation to produce scientifically significant fossils. This is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. In its "Standard Guidelines for the Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources," the Society of Vertebrate Paleontology (SVP, 2010) defines four categories of paleontological sensitivity (potential) for rock units: 1) High Potential, rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources; 2) Low Potential, rock units that are poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule; 3) Undetermined Potential, rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment; and 4) No Potential, rock units like high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites) that will not preserve fossil resources.

## Results

#### **Physical Setting**

The proposed project area is located along the western border of the Santa Ana Mountains, which form the northern boundary of the Peninsular Ranges (Sylvester and O'Black Gans, 2016). Four main phases define the geological history of the Peninsular Ranges (Morton and Miller, 2006). The oldest rocks are a suite of primarily marine sediments deposited along the flanks of island arcs or the edge of the North American continent. These deposits were tectonically amalgamated to the continental border during the Jurassic Period (201.3 to 145 million years ago), concurrent with the development of a major subduction zone. During the second phase (Jurassic to Cretaceous periods [201.3 to 65.5 million years ago]), large volumes of intrusive igneous rocks, such as granodiorite, were intruded into the country rock above the subduction zone. Some volcanic rocks were preserved as well as marine sediments washing off the volcanic arc to the west. Subduction ceased during the end of the Paleogene (66 to 23.03 million years ago) with the collision of a spreading ridge with the trench, leading to the development of a transform plate tectonic boundary. As this new boundary grew north in the Miocene (23.03 to 5.333 million years ago), small mountains formed from uplift and small basins dropped along the boundary, leading to deposition of marine sediments mixed with terrestrial deposits. In the third phase, basins formed, filled, and shifted position as the faults grew through the area. Major mountains were uplifted in the Neogene (23.03 to 2.58 million years ago) along these faults such as the Santa Ana Mountains and the Transverse Ranges to the north. The final phase encompasses the sediments eroding off these mountains to form extensive alluvial fans along the mountain fronts and river and lake deposition in the lowland.

Against this backdrop, the proposed project area is dominated by sedimentary rocks of the third phase, which include a mix of marine and terrestrial sediments associated with basin development during growth of the

transform margin. Portions of the proposed project also overlap alluvial fans of the fourth phase (Morton and Miller, 2006).

#### **Geologic Setting**

Geologic mapping by Morton and Miller (2006) and Tan (1995) indicate there are five geologic units mapped at the surface within the immediately adjacent to (within 200 feet of) the project area including: the Sespe Formation, the Vaqueros Formation, the Santiago Formation, the Puente Formation, the Modeno Volcanics, and young alluvial deposits. These geologic units are summarized in **Table 1** and depicted in **Figure 3**.

Geologic Unit	Map Unit Symbol	Age	Description	Distance from Project	Paleo Sensitivity
Young Alluvial Fan	Qyfsa	Holocene to late Pleistocene (129,000 years ago to present	Unconsolidated to moderately consolidated silt, sand, pebbly cobbly sand, and boulders.	Overlaps	Low at surface increasing with depth
Puente Formation	Тр	Late Miocene (11.63 to 5.333 million years ago)	Marine sandstone, siltstone, and shale.	Within 100 feet	High
El Modeno Vocanics	Tvem	Middle Miocene (15.97 to 11.608 million years ago).	Andesite, tuff, tuff- breccia, and basalt	Within 200 feet	Low
Vaqueros and Sespe (undifferentiated0	Tvs	Late Eocene to Early Miocene (37.8 to 15.97 million years ago	Interbedded marine (Vaqueros) and non-marine (Sespe) sandstone and conglomerate.	Overlaps	High
Santiago Formation	Tsa	Middle Eocene (47.8 million to 38 million years ago)	Basal conglomerate overlain by sandstone and siltstone; upper unit transitions from marine to non- marine	Overlaps	High

TABLE 1 SUMMARY OF GEOLOGIC UNITS WITHIN AND IMMEDIATELY ADJACENT TO PROJECT

#### LACM Records Search

The LACM records search indicates no fossil localities have been identified within the project area; however, a number of vertebrate fossil localities are known from similar geologic units in the project's vicinity (McLeod, 2020). Localities LACM 3983-3985, located northeast and north of the project's northern terminus, respectively, produced marine fossils from the Vaqueros Formation, including an eagle ray, *Myliobatis*, bonito shark, *Isurus planus*, four-legged marine mammal, *Desmostylus*, and toothed whales, Odontoceti. However, McLeod (2020) notes that it is possible these localities came from the 'Topanga Formation' (*sensu lato*), not the Vaqueros. The Topanga Group (sensu stricto) is mapped approximately 0.50 miles west of the project. Additional desmostylid fossils were collected from LACM 6624 and 6666, located near the Santiago Dam approximately 2.25 miles northeast of the project's northern terminus and in Little Joaquin Valley approximately 0.50 miles east of the project's southern terminus, respectively.

According to McLeod (2020), there are no known localities in the Santiago Formation in Orange County; however, the Santiago Formation has yielded fossils from several localities in San Diego County. LACM 5347 in San Onofre Canyon, approximately 28 miles south-southeast of the project, produced fossil specimens of the insectivore *Sespedectes*. Several vertebrate fossil localities around Carlsbad (LACM 3881, 3883-3884, 3979, 4022, 5346-5347, 6926 and 68102), located approximately 45 miles south-southeast of the project, produced a composite fauna of primarily mammals. Locality LACM 68102 produced specimens of protoceratid artiodactyl, *Leptoreodon leptolophus*, and the camels, *Protylopus petersoni* and *Protylopus stocki*.



SOURCE: USGS; Orange, Tustin, and Black Star Canyon Topoquads, CA 7.5-minute

**ESA** 

Peters Canyon Bikeway Extension Project

Figure 3 Geology

#### Literature Review

A review of relevant literature pertaining to paleontological resources indicates most of the geologic units present within and immediately adjacent to the project are known to host significant fossil resources. Locally, the Santiago Formation has yielded significant concentrations of terrestrial mammals during a paleontological monitoring for the housing development in San Clemente approximately 25 miles south-southeast of the project (Santos and Parham, 2016). Elsewhere in southern California, the Santiago Formation has yielded diverse terrestrial mammals of Eocene age.

Whistler and Lander (2003) provide an extensive list of significant fossil assemblages from the 'undifferentiated' Sespe and Vaqueros formations of the northwest Santa Ana Mountains, located east of the project. Their list includes marine vertebrates such as sharks, rays, and turtles as well as terrestrial mammals such as marsupials, insectivores, rabbits, and rodents. It is important to note that six of their localities are within 5 miles of the project and two of the localities are within 0.5 miles of the project.

The Puente Formation in the broad Los Angeles region is a highly fossiliferous Miocene marine unit (Valpey, 1975). Although it is well known for fish such as anglerfish (Pietsch and Lavenberg, 1980; Carnevale et al., 2008), the formation has also yielded invertebrates such as crustaceans (Feldmann, 2003). It is unknown if there are fossiliferous localities near the project as the Puente Formation was not included in the LACM records search. However, a well-known locality known as "Chalk Bluff" from the nearby Puente Hills is located approximately 16 miles northwest of the project (Cooper, 1973, Huddleston and Takeuchi. 2006).

## Paleontological Sensitivity Analysis

The literature and geologic mapping review, as well as the LACM records search results, were used to assign paleontological sensitivity to the geologic units within and adjacent to the Project area, following the guidelines of the SVP (2010):

- Young Alluvial Fan (Qya) Alluvial fan deposits within Peters Canyon are not known to contain significant fossils. Based on the mapped age, Holocene to late Pleistocene, shallow excavations are not likely to impact fossil resources. However, deeper excavations may encounter older alluvium that contain fossils. Therefore, this unit is assigned a Low-to-High Potential to contain paleontological resources, increasing with depth.
- **Puente Formation (Tp)** The Puente Formation is composed of a sequence of sandstone, siltstone, and shale, deposited in a marine setting. While not labeled on the Morton or Miller (2006) map, it is clear from the Tan (1995) map, which was used as a data source, that the formation underlies the northernmost part of the project area. The Puente Formation has produced vertebrate fossils throughout Los Angeles—most notably in the nearby Puente Hills. Based on the published record, the Puente Formation is assigned a **High Potential** to contain paleontological resources.
- El Modeno Volcanics (Tvem) In the northern Santa Ana Mountains, the series of volcanic rocks attributed to the El Modeno Formation are mapped as an undifferentiated sequence of andesite, tuff, tuff-breccia, and basalt. While fossils may be recovered from tuff deposits, there is no known record from the Santa Ana Mountains and other volcanic units are not likely to host fossils. Therefor this formation is assigned a Low Potential to contain paleontological resources.

- Vaqueros and Sespe Formations (undifferentiated) (Tvs) In the project area, the marine Vaqueros Formation interbeds with the non-marine Sespe Formation on a bed-by-bed scale. Both formations are richly fossiliferous, producing important and diverse fossils from within 0.5 to 5 miles of the project area. Therefore, this formation is assigned a **High Potential** to contain paleontological resources.
- Santiago Formation (Tsa) The Santiago Formation has produced important vertebrate fossils throughout southern California. Yet, as noted in the records search (McLeod, 2020), the Santiago is poorly studied in Orange County. However, a number of well-known fossil localities have been identified within San Diego County from Santiago Formation. Therefore, this formation is assigned a **High Potential** to contain paleontological resources.

## Summary and Recommendations

As a result of this study, three of the five geologic units mapped at surface within and immediately adjacent to the project area have high paleontological sensitivity (Puente Formation [Tp], Undifferentiated Vaqueros and Sespe formations [Tvs], and Santiago Formation [Tsa]), one has low-to high paleontological sensitivity increasing with depth (Young Alluvial Fan [Qya]), and one has low paleontological sensitivity (El Modeno Volcanics [Tvem]). Given the project area's potential to contain paleontological resources, grading activities associated with Class I bike lane construction have the potential to encounter fossiliferous sediments. Therefore, the following recommendations would mitigate potential impacts to unique paleontological resources or unique geological features, should they be encountered during project implementation.

- 1. Prior to the start of construction activities, OCPW should retain a Qualified Paleontologist that meets the standards of the Society for Vertebrate Paleontology (2010) to carry out all mitigation measures related to paleontological resources.
- 2. Prior to start of any ground disturbing activities, the qualified paleontologist should conduct preconstruction worker paleontological resources sensitivity training. The Qualified Paleontologist should contribute to any construction worker cultural resources sensitivity training either in person or via a training module. The training should include information on what types of paleontological resources could be encountered during excavations, what to do in case an unanticipated discovery is made by a worker, and laws protecting paleontological resources. All construction personnel should be informed of the possibility of encountering fossils and instructed to immediately inform the construction foreman or supervisor if any bones or other potential fossils are unexpectedly unearthed in an area where a paleontological monitor is not present. OCPW will ensure that construction personnel are made available for and attend the training and retain documentation demonstrating attendance.
- 3. Paleontological resources monitoring should be performed by a qualified paleontological monitor (meeting the standards of the SVP, 2010) working under the direction of the qualified paleontologist. Paleontological resources monitoring will be conducted for all ground disturbing activities of previously undisturbed sediments of the Puente, Santiago, Vaqueros, and Sespe formations, as well as all excavations exceeding 15 feet deep within Young Alluvial Fan deposits as depicted in Figure 3 of this memorandum. The El Modelo Volcanics have low potential to contain paleontological resources and would not require monitoring. Monitoring will consist of visually inspecting fresh exposures of rock for larger fossil remains and, where appropriate, collecting wet or dry screened standard sediment samples

(up to 4.0 cubic yards) of promising horizons for smaller fossil remains (SVP, 2010). Per the Society for Vertebrate Paleontology standards (2010), once 50 percent of excavations or other ground disturbing activities are complete within geologic units assigned high paleontological sensitivity and no fossils are identified, monitoring can be reduced to part-time inspections or ceased entirely if determined adequate by the qualified paleontologist in consultation with OCPW. Monitoring activities will be documented in a Paleontological Resources Monitoring Report to be prepared by the Qualified Paleontologist at the completion of construction and should be provided to OCPW within six (6) months of project completion. If fossil resources are identified during monitoring, the report will also be filed with the Natural History Museum of Los Angeles County.

4. If a paleontological resource is discovered during construction, all project-related ground disturbing activities within a 100-foot buffer around of the find shall be temporarily diverted to facilitate evaluation of the discovery and OCPW will be immediately notified of the find. Work will be allowed to continue outside of the buffer area. At the qualified paleontologist's discretion and to reduce any construction delay, the grading and excavation contractor should assist in removing rock samples for initial processing and evaluation of the find. All significant fossils will be collected by the paleontological monitor and/or the qualified paleontologist. Collected fossils will be prepared to the point of identification and catalogued before they are submitted to their final repository. Any fossils collected will be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County, if such an institution agrees to accept the fossils. If no institution accepts the fossil collection, they should be donated to a local school in the area for educational purposes. Accompanying notes, maps, and photographs should also be filed at the repository and/or school.

### References

- Boessenecker, R.W. and M. Churchill. 2013. A reevaluation of the morphology, paleoecology, and phylogenetic relationships of the enigmatic walrus *Pelagiarctos*: PloS One v. 2013(E54311). DOI:10.1371/journal.pone.0054311
- Carnevale, G., T.W. Pietsch, G.T. Takeuchi, and R.W. Huddleston. 2008. Fossil ceratioid anglerfishes (Teleostei, Lophiiformes) from the Miocene of the Los Angeles Basin, California: Journal of Paleontology, v. 82, Iss. 5, p. 996-1008.
- Cooper, J.D. 1973. "Chalk Hill"; an upper Miocene fossil fish locality in Woyski, M.S., et al., eds., Guidebook to the Tertiary Geology of Eastern Orange and Los Angeles Counties: South Coast Geolgical Society, Tustin, California, p. 77-80.
- Feldmann, R.M. 2003. Decapod crustaceans from the Puente Formation (late middle to early late Miocene), California; a possible mass death: Bulletin - Southern California Academy of Sciences v. 102, Iss. 3, p. 107-118.
- Huddleston, R.W. and G.T. Takeuchi. 2006. A new late Miocene species of sciaenid fish, based primarily on an in situ otolith from California: Bulletin of the Southern California Academy of Science, v. 105(1), p. 30–42
- McLeod, Samuel. 2020. Paleontological resources for the proposed Peters Canyon Bikeway Extension Project, Project in the Cities of Orange and Tustin, Orange County. Prepared for Environmental Science Associates by the Natural History Museum of Los Angeles County.
- Morton, D.M., and Miller, F.K., 2006, Geologic map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California: U.S. Geological Survey, Open-File Report OF-2006-1217, scale 1:100,000).
- Pietsch, T.W. and R.J. Lavenberg. 1980. A fossil ceratioid anglerfish from the late Miocene of California: Copeia, v. 1980, Iss. 4, p. 906-908.
- Santos, G.-P., and J.F. Parham. 2016. Description of the sedimentology and taphonomy of the late Uintan Talega Bonebed from Orange County, California: Abstracts with Programs - Geological Society of America v. 48(4): Abstract no. 27-2.
- Society of Vertebrate Paleontology (SVP). 2010. Standard procedures for the assessment and mitigation of adverse impacts to paleontological resources.
- Sylvester, A.G. and E. O'Black Gans. 2016. Roadside Geology of Southern California: Mountain Press, 400 p.
- Valpey, D. 1975. Fossils of the Puente Formation, Elsereno, California: Earth Science v. 28, Iss. 4, p. 187-189.
- Whistler, D.P. and E.B. Lander. 2003. New late Uintan to early Hemingfordian Land Mammal Assemblages from the Undifferentiated Sespe and Vaqueros Formations, Orange County, and from the Sespe and Equivalent Marine Formation in Los Angeles, Santa Barbara, and Ventura Counties, Southern California. In Flynn, L.J. (ed.) Vertebrate Fossils and Their Context; Contributions in Honor of Richard H. Tedford: Bulletin of the American Museum of Natural History, v. 279, p. 231-268.