Initial Study/Mitigated Negative Declaration

County of San Bernardino Department of Public Works

Sunburst Avenue Class I Bike Path and Class II Bike Lanes Project
Joshua Tree, San Bernardino County, CA

Lead Agency

County of San Bernardino
Department of Public Works
825 E. Third Street
San Bernardino, CA 92415

Technical assistance provided by:

ECORP Consulting, Inc.
215 North Fifth Street
Redlands, CA 92374

September 2019

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SECTION 1 – INTRODUCTION

The County of San Bernardino is proposing the Sunburst Avenue Class I Bike Path and Class II Bike Lanes Project (Proposed Project). The Proposed Project consists of the design and rehabilitation of an existing Class I bike path and the design and construction of two new Class II bike lanes along Sunburst Avenue from State Route 62 (SR-62) to the new Joshua Tree Elementary School at Calle Los Amigos in the community of Joshua Tree in unincorporated San Bernardino County.

Project Purpose and Need:

The purpose of the Proposed Project is to meet the identified need for a non-vehicular trail for pedestrians and bicyclists to provide for the increased safety of students and the local residents.

SECTION 2 – REGULATORY FRAMEWORK

The County of San Bernardino Department of Public Works has identified that the Sunburst Avenue Class I Bike Path and Class II Bike Lanes Project meets the California Environmental Quality Act (CEQA) Guidelines Section 15378 definition of a Project. CEQA Guidelines Section 15378 defines a Project as the following:

"Project" means the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.

In accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Sections 21000-21177), this Initial Study has been prepared to determine potentially significant impacts upon the environment resulting from the construction, operation and maintenance of the Sunburst Avenue Class I Bike Path and Class II Bike Lanes Project (hereinafter referred to as the "Project" or “Proposed Project”). In accordance with Section 15063 of the State *CEQA Guidelines*, this Initial Study is a preliminary analysis prepared by the County of San Bernardino Department of Public Works as Lead Agency to inform the Lead Agency decision makers, other affected agencies, and the public of potential environmental impacts associated with the implementation of the Proposed Project.

Initial Study Organization

This Initial Study is organized as follows:

Introduction: Provides the regulatory context for the review along with a brief summary of the CEQA process.

Project Information: Provides fundamental Project information, such as the Project description, Project location, and figures.

Lead Agency Determination: Identifies environmental factors potentially affected by the Project and identifies the Lead Agency's determination based on the initial evaluation.

Mitigated Negative Declaration: Prepared when a determination can be made that no significant environmental effects will occur because revisions to the Project have been made or mitigation measures will be implemented which will reduce all potentially significant impacts to less than significant levels.

Evaluating Environmental Impacts: Provides the parameters the County uses when determining level of impact.

CEQA Checklist: Provides an environmental checklist and accompanying analysis for responding to checklist questions.

References: Include a list of references and various resources utilized in preparing the analysis.

SECTION 3 – DETAILED PROJECT DESCRIPTION

Project Location

The Proposed Project is located in the unincorporated community of Joshua Tree, San Bernardino County, California (Figure 1). The project site begins at the intersection of Sunburst Avenue and State Route 62 (SR-62; Twentynine Palms Highway) and continues north for approximately two miles to the intersection of Sunburst Avenue and Calle Los Amigos (Figure 2).

Project Characteristics

The Proposed Project would include the following improvements:

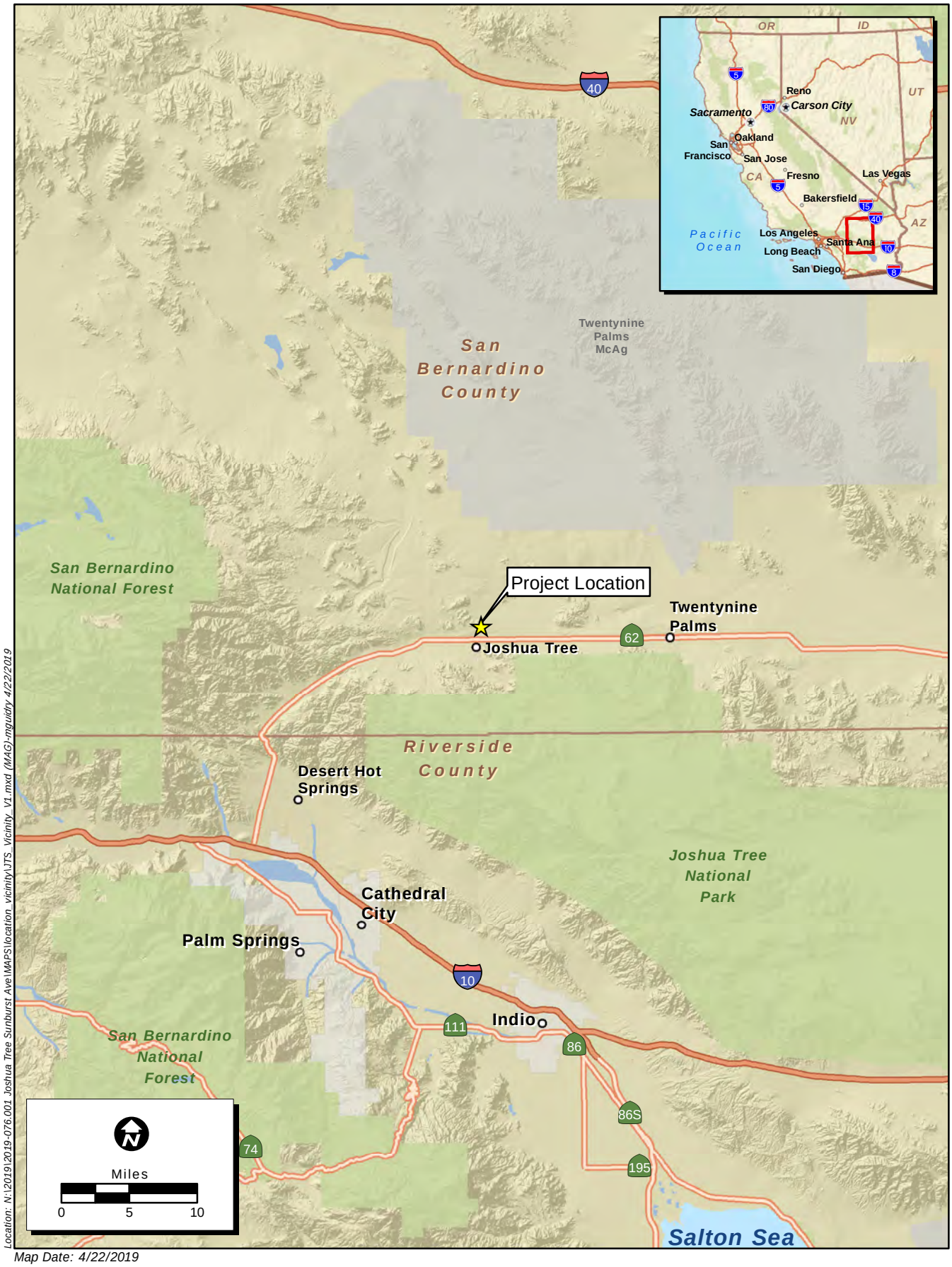
- Rehabilitate the existing Class I bike path located along the east side of Sunburst Avenue from SR-62 north to Oleander Avenue (approximately 0.5 miles)
- Construct a new Class II bike lane on the east side of Sunburst Avenue from the termination of the existing Class I bike path (Oleander Avenue) north to Calle Los Amigos (approximately 1.5 miles)
- Construct a new Class II bike lane on the west side of Sunburst from State Route 62 north to Calle Los Amigos (approximately 2.0 miles)

The rehabilitation of the existing Class I bike path on the east side of Sunburst Avenue would include a 6.5-foot shoulder between the Sunburst Avenue and the bike path, an 8-foot paved concrete bike path, and a two-foot shoulder along the eastern edge of the bike path. The new Class II bike lanes would be approximately four to five feet wide with two-foot shoulders on each side. All improvements would occur within the existing Right-of-Way (ROW) of Sunburst Avenue.

Construction of the Proposed Project would include: earthwork, including minor excavation and grading; installation of signage; and painting of pavement striping and pavement markings. Construction staging would occur at the former Joshua Tree Elementary School parking lot, located at 6051 Sunburst Street, and adjacent to the new Joshua Tree Elementary School within Sunburst Avenue near the intersection with Cowan Lane.

Project Timing

Construction is anticipated to begin in 2020 and could take up to six months to complete.



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Map Date: 4/22/2019

Service Layer Credits: Sources: Esri, USGS, NOAA

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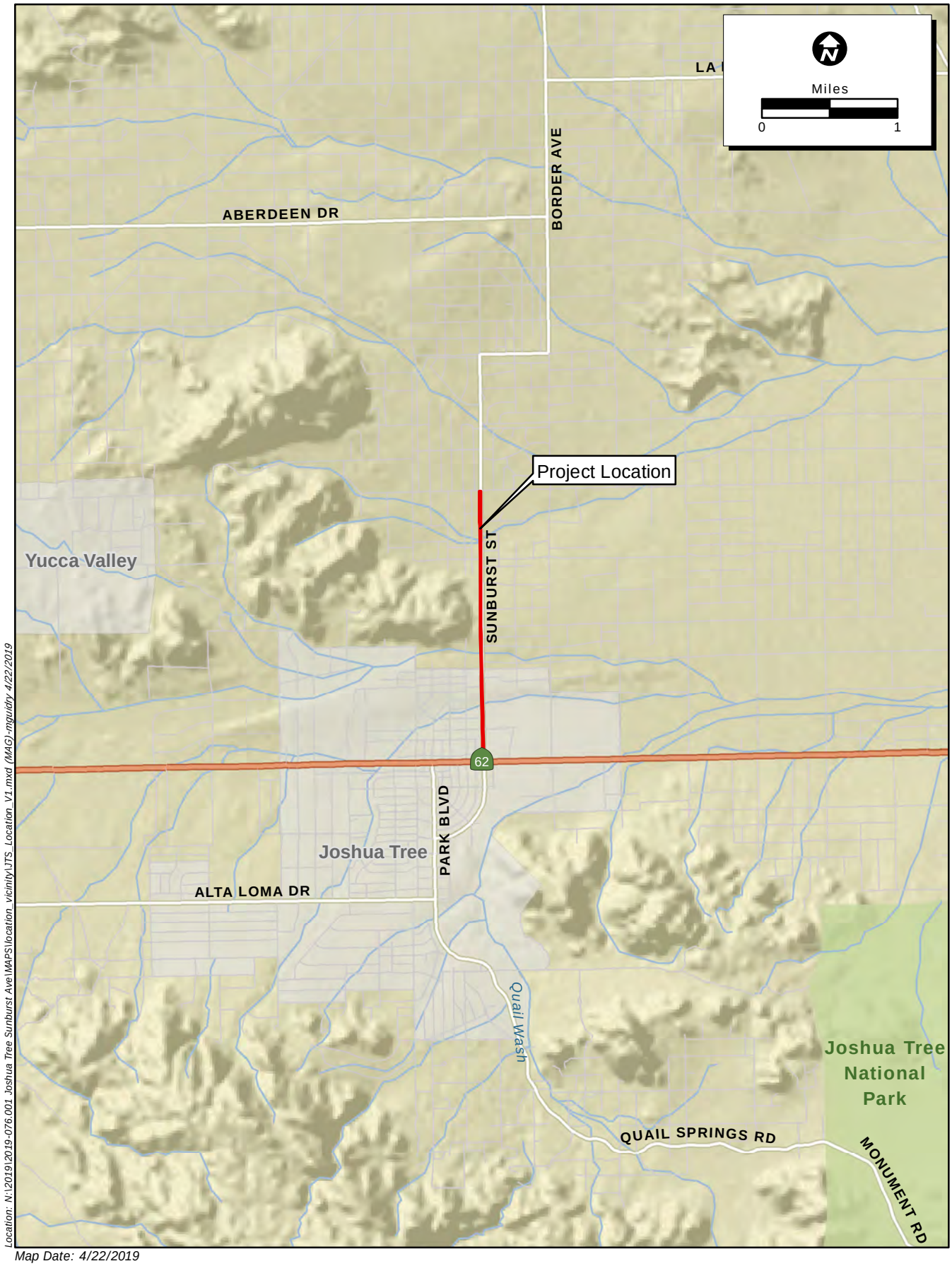
Figure 1. Regional Location

2019-076.001 Joshua Tree Sunburst Ave



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Map Date: 4/22/2019
Source: ESRI

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Figure 2. Project Location

2019-076.001 Joshua Tree Sunburst Ave

SECTION 4 – ENVIRONMENTAL CHECKLIST FORM

1.	**Project Title:**	Sunburst Avenue Class I Bike Path and Class II Bike Lanes Project
2.	**Lead Agency Name:**	County of San Bernardino Department of Public Works
	Address:	825 East Third Street San Bernardino, California 92415-0835
3.	**Contact Person:**	Nancy J. Sansonetti, AICP Nancy.Sansonetti@dpw.sbcounty.gov 909-387-8109
4.	**Project Location:**	The Proposed Project is located in the unincorporated community of Joshua Tree, San Bernardino County, California (Figure 1). The project site begins at the intersection of Sunburst Avenue and State Route 62 (SR-62; Twentynine Palms Highway) and continues north for approximately two miles to the intersection of Sunburst Avenue and Calle Los Amigos.
	Topographic Quad (USGS 7.5”):	Joshua Tree North 1972 (Revised 1994)
	Topographic Quad Coordinates:	Township 1N, Range 6E, Sections 24 and 25
	Latitude/Longitude	34° 8'57.76"N/ 116°18'31.12"W
5.	**Project Sponsor:**	County of San Bernardino Department of Public Works
	Name and Address:	Transportation Design Division 825 E. Third Street San Bernardino, CA 92415
6.	**General Plan/Zoning Designation:**	Street Right-of-Way (over various land use districts)

7. Project Description Summary:

The Proposed Project would rehabilitate the existing Class I bike path located along the east side of Sunburst Avenue from SR-62 north to Oleander Avenue. The Proposed Project would also construct a new Class I bike lane on the east side of Sunburst Avenue, from the terminus of the existing Class I bike path north to Calle Los Amigos, and a new Class II bike lane on the west side of Sunburst Avenue, from SR-62 north to Calle Los Amigos.

Details of the Project are further discussed in Section 3 above.

8. Environmental/Existing Site Conditions:

The project site is located along Sunburst Avenue from SR-62 to Calle Los Amigos (approximately 2 miles). This segment of Sunburst Avenue is a paved two-lane street with unpaved road shoulders. There is an existing paved Class I bike path located along the east side of Sunburst Avenue from SR-62 north to Oleander Avenue (approximately 0.5 miles). Within the boundaries of the project site there are disturbed areas that contain little to no vegetation. Properties fronting Sunburst Avenue are sparsely developed with residential and commercial land uses. Unauthorized trash dumping and off-highway vehicle (OHV) use are prevalent in the surrounding areas, degrading the quality of vegetation located in adjacent areas. The topography of the project site is relatively flat; however, a small mountain range is located just west of the central portion of the project site. Three drainages running in a west-east direction cross the project site. No riparian habitat is associated with these drainages and no riparian habitat was identified within the project site.

9. Surrounding land uses and setting:

The project site is generally located within an area characterized by rural residential development interspersed with undeveloped properties and a few commercial and institutional land uses (Sportsman's Park, Joshua Tree Park & Recreation District).

As identified by the County of San Bernardino Land Use Plan, land use zoning districts located immediately adjacent to the trail alignment include: General Commercial (CG-SCp); Multiple Residential (RM); Institutional (IN); Single Residential (RS); and Rural Living (RL).

10. Other public agencies whose approval is required:

<u>State Agencies:</u>

1) California Department of Fish and Wildlife
2) State Water Resources Control Board (Colorado River – R7)

11. Lead Agency Discretionary Actions:

Discretionary actions that may be taken by the Lead Agency include, but are not limited to, the following:

- Board of Supervisors, certification of environmental documentation

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact requiring mitigation to be reduced to a level that is less than significant as indicated in the checklist on the following pages.

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

LEAD AGENCY DETERMINATION

On the basis of this initial evaluation, the following finding is made:

	The proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
X	Although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
	The proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
	The proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
	Although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Darren J. Meeka 09/11/19

Signature [Darren J. Meeka, P.E., Chief] Date

1. AESTHETICS

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

(Check ☒ if project is located within a view-shed of any Scenic Route listed in the General Plan):

Environmental Setting

Regional Setting

The project site is located within the community of Joshua Tree. Joshua Tree is nestled in the foothills in southeastern California's Mojave Desert and is located in southcentral San Bernardino County. Joshua Tree is generally bordered on the north by the Twentynine Palms Marine Corps Base, partially on the east by the City of Twentynine Palms and Copper Mountain, on the south by the Joshua Tree National Park, on the southwest by the Town of Yucca Valley and on the northwest by the eastern boundary of the Homestead Valley Community. Joshua Tree's community character is drawn from the desert landscape and rugged mountain setting of its surroundings. Prominent topographic features in the project area include the Bartlett Mountains to the west and the San Bernardino Mountains to the south.

State Scenic Highways

The California Scenic Highway Program protects and enhances the scenic beauty of California's highways and adjacent corridors. A highway can be designated as scenic based on how much natural beauty can be seen by users of the highway, the quality of the scenic landscape, and if development impacts the enjoyment of the view. SR-62, located just south of the project site, is an Eligible State Scenic Highway (Caltrans 2019). The portion of SR-62 south of the project site is an Officially Designated County Scenic Route (County of San Bernardino 2006b).

Visual Character of the Project Site

The project site is located entirely within the ROW of Sunburst Avenue between SR-62 north to Calle Los Amigos (approximately 2 miles). This segment of Sunburst Avenue is a paved two-lane street with unpaved road

shoulders. There is an existing paved Class I bike path located along the east side of Sunburst Avenue from SR-62 north to Oleander Avenue (approximately 0.5 miles). Within the boundaries of the project site there are disturbed areas that contain little to no vegetation. Properties fronting Sunburst Street are sparsely developed with residential and commercial land uses. Unauthorized trash dumping and OHV use are prevalent in the surrounding areas. The topography of the project site is relatively flat; however, a small mountain range (Bartlett Mountains) is located just west of the central portion of the project site.

Impact Analysis

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

No Impact. The project site is surrounded by scenic views of the desert landscape including prominent topographic features, which include the Bartlett Mountains to the west and the San Bernardino Mountains to the south. The Project proposed rehabilitation of an existing Class I bike path and the construction of new Class II bike lanes on the northbound and southbound sides of Sunburst Avenue. Proposed improvements are not anticipated to affect the viewsheds or scenic vista of the project site and in turn would enhance accessibility for non-motorized users along Sunburst Avenue. No Impact would occur.

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

No Impact. The project site is not located within the viewshed of a state scenic highway (Caltrans 2019). However, SR-62 located just south of the project site is an Eligible State Scenic Highway (Caltrans 2019). The Joshua Tree Community Plan includes a policy to seek state support and assistance for the designation of SR-62 as an official State Scenic Highway (County of San Bernardino 2007b). The portion of SR-62 south of the project area is an Officially Designated County Scenic Route (County of San Bernardino 2006b).

The Proposed Project would be constructed entirely within the ROW of Sunburst Avenue and would not affect potentially scenic resources along SR-62. Proposed improvements are located at ground level and are not anticipated to affect the viewsheds along SR-62 or Sunburst Avenue. In turn, the improvements would enhance accessibility for non-motorized vehicle users and pedestrians. No Impact would occur.

c) Substantially degrade an existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

No Impact. The project site is located entirely within the ROW of Sunburst Avenue and improvements would be located at ground level. This segment of Sunburst Avenue is a paved two-lane street with unpaved road shoulders. There is an existing paved Class I bike path located along the east side of Sunburst Avenue from SR-62 north to Oleander Avenue (approximately 0.5 miles). Within the boundaries of the project site there are disturbed areas that contain little to no vegetation. Properties fronting Sunburst Street are sparsely developed with residential and commercial land uses. Unauthorized trash dumping and OHV use are prevalent in the surrounding areas. The topography of the project site is relatively flat; however, a small mountain range (Bartlett Mountains) is located just west of the central portion of the project site.

The Proposed Project would be consistent and compatible with the land uses of the area and not degrade the existing visual character of the area. No impact would occur.

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

No Impact. The Proposed Project does not include lighting nor the use of materials that would generate glare. No impact would occur.

Mitigation Measures

None.

Aesthetics Impact Conclusions

No significant impacts were identified, and no mitigation measures are required.

2. AGRICULTURE AND FORESTRY RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X

(Check ☐ if project is located in the Important Farmlands Overlay):

Environmental Setting

The Proposed Project is located in the unincorporated community of Joshua Tree, San Bernardino County, California. The project site begins at the intersection of Sunburst Avenue and SR-62; and continues north for approximately two miles to the intersection of Sunburst Avenue and Calle Los Amigos, east and southeast of

Bartlett Mountains. The Proposed Project traverses or is immediately adjacent to property with the following zoning designations: Joshua Tree – General Commercial-Sign Control Primary; Multiple Residential; Institutional; Single Residential; Single Residential – 14,000 square feet Minimum, and Rural Living (County of San Bernardino 2019).

Impact Analysis

a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The project site is located within street ROW in the community of Joshua Tree and is not located within farmland uses. According to the California Farmland Mapping and Monitoring Program (FMMP) Important Farmlands Map for San Bernardino County, the project site is not located within Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) (CDC 2017). Therefore, the Proposed Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to non-agricultural use. No impact would occur.

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

No Impact. The project site is located within street ROW traversing or immediately adjacent to property with the following zoning designations: Joshua Tree – General Commercial-Sign Control Primary; Multiple Residential; Institutional; Single Residential; Single Residential – 14,000 square feet Minimum, and Rural Living (County of San Bernardino 2019). According to the California Department of Conservation Williamson Act Parcels Map for San Bernardino County, the project site is not subject to a Williamson Act Contract (CDC 2016). Therefore, the Proposed Project would not result in a conflict with an agricultural zoning designation or a Williamson Act Contract. No impact would occur.

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

No Impact. As identified by the County of San Bernardino Land Use Services Zoning Look-up Web Application, zoning designations traversed or immediately adjacent to the Proposed Project include: Joshua Tree – General Commercial-Sign Control Primary; Multiple Residential; Institutional; Single Residential; Single Residential – 14,000 square feet Minimum, and Rural Living (County of San Bernardino 2019). The Proposed Project would not conflict with existing zoning of forest land, timberland, or timberland zone production. No impact would occur.

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

No Impact. The project site is not zoned for forest land, timberland, or timberland production (County of San Bernardino 2019). The project site is located within street right-of-way and does not contain forestland or timberland. No impact would occur.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. The Proposed Project is located within street right-of-way along Sunburst Avenue. The Project alignment is not located within agricultural use land. Therefore, the Proposed Project would not convert farmland to non-agricultural use or convert forest land to non-forest use. No impact would occur.

Mitigation Measures

None.

Agriculture and Forestry Services Impact Conclusions

No significant impacts were identified, and no mitigation measures are required.

3. AIR QUALITY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?				x
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?			x	
c) Expose sensitive receptors to substantial pollutant concentrations?			x	
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			x	

(Discuss conformity with the South Coast Air Quality Management Plan, if applicable):

Environmental Setting

The project site is located in the unincorporated community of Joshua Tree, located in southern San Bernardino County. The California Air Resource Board (CARB) has divided California into regional air basins according to topographic features. San Bernardino County and the Project site are located in a region identified as the Mojave Desert Air Basin (MDAB). The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains which dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada mountains to the north; air masses pushed onshore in southern California by differential heating are channeled through the MDAB.

Both the U.S. Environmental Protection Agency (USEPA) and the CARB have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants representing safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called “criteria” pollutants because the health and other effects of each pollutant are described in criteria documents. The six criteria pollutants are ozone (O_3) (O_3 precursor emissions include nitrogen oxide (NO_x) and reactive organic gases (ROG)), carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. The San Bernardino portion of the MDAB is designated as a nonattainment area for the federal O_3 and PM_{10} standards and is also a nonattainment area for the state standards for O_3, PM_{10}, and $PM_{2.5}$.

The local air quality agency affecting the MDAB is the Mojave Desert Air Quality Management District (MDAQMD), which is charged with the responsibility of implementing air quality programs and ensuring that national and state ambient air quality standards are not exceeded and that air quality conditions are maintained in the MDAB. In an attempt to achieve national and state ambient air quality standards and maintain air quality,

the air district has completed the several air quality attainment plans and reports, which together constitute the State Implementation Plan (SIP) for the portion of the MDAB encompassing the Project.

Impact Analysis

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

No Impact. As part of its enforcement responsibilities, the EPA requires each state with nonattainment areas to prepare and submit a SIP that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under state law, the California Clean Air Act requires an air quality attainment plan to be prepared for areas designated as nonattainment with regard to the federal and state ambient air quality standards. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

As previously mentioned, the project site is located within the MDAB, which is under the jurisdiction of the MDAQMD. The MDAQMD is required, pursuant to the federal Clean Air Act, to reduce emissions of criteria pollutants for which the air basin is in nonattainment. In order to reduce such emissions, the MDAQMD adopts and enforces rules and regulations concerning sources of air pollution, issues permits for stationary sources of air pollution, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the federal Clean Air Act and Clean Air Act Amendments. The MDAQMD also assists CARB in preparing the SIP by preparing Attainment Plans that demonstrate how the ambient air quality standards will be achieved. The Attainment Plans describe the rules, policies, and other means by which the MDAQMD manages the emissions within its jurisdiction.

A project is conforming with the MDAQMD Attainment Plans if it complies with all applicable district rules and regulations, complies with all control measures from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan). A project is nonconforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. Conformity with growth forecasts can be established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast. An example of a nonconforming project would be one that increases the gross number of dwelling units, increases the number of trips, and/or increases the overall vehicle miles traveled in an affected area (relative to the applicable land use plan).

The Proposed Project would comply with all applicable district rules and regulations and would comply with all proposed control measures from the applicable plans. As demonstrated under Issue b) below, the Proposed Project would not surpass any of the MDAQMD's significance thresholds for individual pollutants. Additionally, the Proposed Project would not be impacting the growth forecast used to inform MDAQMD air quality planning. Since the Proposed Project would not generate a significant amount of air pollutants and would not exceed the population or job growth projections used to develop MDAQMD's Attainment Plans, it would not result in a conflict.

For these reasons, no impact would occur.

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?

Less Than Significant.

Regional Construction Significance Analysis

Construction-generated emissions are temporary and short term but have the potential to represent a significant air quality impact. Three basic sources of short-term emissions will be generated through construction of the Proposed Project: operation of the construction vehicles (i.e., excavators, trenchers, dump trucks), the creation of fugitive dust during clearing and grading, and construction worker commutes. Construction activities such as excavation and grading operations, construction vehicle traffic, and wind blowing over exposed soils would generate exhaust emissions and fugitive particulate matter emissions that affect local air quality at various times during construction. Effects would be variable depending on the weather, soil conditions, the amount of activity taking place, and the nature of dust control efforts.

Construction-generated emissions associated with the Proposed Project were calculated using the CARB-approved CalEEMod computer program, which is designed to model emissions for land use development projects, based on typical construction requirements. See Appendix A for more information regarding the construction assumptions, including construction equipment and duration, used in this analysis.

Predicted maximum daily construction-generated emissions for the Proposed Project are summarized in Table 3-1. Construction-generated emissions are short term and of temporary duration, lasting only as long as construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the MDAQMD's thresholds of significance.

Table 3-1. Construction-Related Emissions (Regional Significance Analysis)

Construction Year	Maximum Pollutants (pounds per day)					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Annual (Maximum Tons per Year)						
Construction - 2020	0.64	6.51	4.68	0.00	0.41	0.32
MDAQMD Annual Significance Threshold	*25*	*25*	*100*	*25*	*15*	*12*
Exceed MDAQMD Annual Threshold?	No	No	No	No	No	No
Daily (Maximum Pounds per Day)						
Construction - 2020	11.57	112.26	85.54	0.17	7.84	5.31
MDAQMD Daily Significance Threshold	*137*	*137*	*548*	*137*	*82*	*65*
Exceed MDAQMD Daily Threshold?	No	No	No	No	No	No

Source: CalEEMod version 2016.3.2. Refer to Appendix A for Model Data Outputs.

Notes: Emission estimates account for the grading of 84,480 square feet as well as the removal of 1,016 tons of debris.

As shown in Table 3-1, emissions generated during construction would not exceed the MDAQMD's annual or daily regional thresholds of significance. This would be considered a less than significant impact.

Project Operations Criteria Air Quality Emissions

Regional Operational Significance Analysis

The Proposed Project involves the construction of approximately 2 miles of bike paths and lanes. The Proposed Project would not include the provision of new permanent stationary or mobile sources of emissions, and therefore, by its very nature, would not generate quantifiable air quality emissions from Project operations. The Proposed Project does not propose any buildings and therefore no permanent source or stationary source emissions. Furthermore, the Proposed Project could be expected to reduce traffic trips in the area due to its ability meet the identified need for a non-vehicular trail to service local residents in the community. This potential reduction of automobile trips attributable to the Proposed Project would reduce the amount of daily criteria air pollutants currently being generated. Thus, there would be no operational impact related to air quality.

For these reasons, the impact would be a less than significant impact.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant. Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

Construction-Generated Air Contaminants

Construction-related activities would result in temporary, short-term Project-generated emissions of diesel particulate matter (DPM) from the exhaust of off-road, heavy-duty diesel equipment for site preparation (e.g., clearing, grading); soil hauling truck traffic; paving; and other miscellaneous activities. For construction activity, DPM is the primary toxic air contaminant (TAC) of concern. Particulate exhaust emissions from diesel-fueled engines (i.e., DPM) were identified as a TAC by the CARB in 1998. The potential cancer risk from the inhalation of DPM, as discussed below, outweighs the potential for all other health impacts (i.e., non-cancer chronic risk, short-term acute risk) and health impacts from other TACs. Accordingly, DPM is the focus of this discussion.

Based on the emission modeling conducted the maximum construction-related emissions of exhaust $PM_{2.5}$, considered a surrogate for DPM, would be 4.67 pounds per day (see Appendix A) during construction activity ($PM_{2.5}$ is considered a surrogate for DPM because more than 90 percent of DPM is less than 1 microgram in diameter and therefore is a subset of particulate matter under 2.5 microns in diameter (i.e., $PM_{2.5}$), according to CARB. Most $PM_{2.5}$ derives from combustion, such as use of gasoline and diesel fuels by motor vehicles.) Furthermore, even during the most intense month of construction, emissions of DPM would be generated from different locations on the Project site, rather than a single location, because different types of construction activities (e.g., site preparation, grading, paving) would not occur at the same place at the same time and also due to the long length of the construction area.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively

correlated with time, meaning that a longer exposure period would result in a higher exposure level for any exposed receptor. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-, 30-, or 9-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the Proposed Project. Consequently, an important consideration is the fact that construction of the Proposed Project is not anticipated to last 9 consecutive years, the minimum duration of exposure from which to calculate health risk (Project construction is anticipated to last approximately 6 months), and that on a day-to-day basis construction activity generally spans eight hours as opposed to throughout the entire day. Therefore, considering the relatively low mass of DPM emissions that would be generated during even the most intense season of construction and the relatively short duration of construction activities required to develop the site, construction-related TAC emissions would not expose sensitive receptors to substantial amounts of air toxics.

Operational Air Contaminants

The Proposed Project involves the construction of approximately 2 miles of bike paths and lanes. The Proposed Project would not include the provision of new permanent stationary or mobile sources of emissions, and therefore, by its very nature, will not generate quantifiable air toxic emissions from Project operations.

For these reasons, the impact would be a less than significant impact.

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

Less Than Significant. Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Construction

During construction, the Proposed Project presents the potential for generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site. However, these emissions are short-term in nature and will rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Additionally, odors would be localized and generally confined to the construction area. Therefore, under CEQA, construction odors would result in a less than significant impact related to odor emissions.

Operations

The CARB's *Air Quality and Land Use Handbook* (2005) identifies the sources of the most common operational odor complaints received by local air districts. Typical sources include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. The Proposed Project does not contain any of the land uses identified as typically associated with emissions of objectionable odors. As such, a less than significant impact would occur.

For these reasons, the impact would be a less than significant impact.

Mitigation Measures

None.

Air Quality Impact Conclusions

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

4. BIOLOGICAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?				X
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				X
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

☐ Check if project is located in the Biological Resources Overlay or Contains habitat for any species listed in the California Natural Diversity Database

Environmental Setting

A Biological Technical Report was completed for the Proposed Project (ECORP 2019b; Appendix B). A reconnaissance-level biological survey was conducted to document the existing biological resources, to assess the habitat for its potential to support sensitive plant and wildlife species, and to determine whether impacts would occur to sensitive biological resources, as required under CEQA.

The project site consists of an existing paved roadway with adjacent residential and commercial development. Disturbed areas that contain little to no vegetation are interspersed throughout the boundaries of the project site. Unauthorized trash dumping and OHV use are prevalent in the surrounding areas, degrading the quality of vegetation located in adjacent areas. The topography of the project site is relatively flat; however, a small mountain range is located just west of the central portion of the project site. Three drainages running in a west-east direction cross the project site. No riparian habitat is associated with these drainages and no riparian habitat was identified within the project site. Some willows were observed in a front yard of an adjacent residence, but

these willows appeared to have been planted as ornamental plantings and did not comprise an area that would be classified as riparian habitat (ECORP 2019b).

Impact Analysis

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

Less Than Significant with Mitigation Incorporated

Special-Status Plants

The literature search completed for the Proposed Project identified 16 special-status plant species that have been documented near the project site. All 16 species are presumed absent from the project site because of the lack of suitable habitat. The project site is heavily disturbed and developed which includes areas that are graded with compacted soils and/or paved (ECORP 2019b).

Special-Status Wildlife

The literature search completed for the Proposed Project identified 19 special-status wildlife species that have been documented near the project site. All but three of the 19 species are presumed absent due to the project site's current heavily disturbed and developed condition (ECORP 2019b).

The three species with the potential to occur within or adjacent to the Proposed Project include burrowing owl (*Athene cunicularia*), desert tortoise (*Gopherus agassizii*), and Le Conte's thrasher (*Toxostoma lecontei*). These three special-status wildlife species were found to have a low potential to occur within the project site. The project site does not provide suitable habitat for any of these three species. However, these species were all recently documented within one to two miles from the project site and the disturbed Mojave creosote bush scrub in the immediately adjacent areas provides low-quality suitable habitat for these species. Furthermore, there is potential for these species to occur on or adjacent to the project site due to their mobile nature (for example, a desert tortoise could occur on the project site if it was trying to cross Sunburst Avenue from one area of disturbed Mojave creosote bush scrub to another). If these species were to occur on or adjacent to the project site, direct impacts in the form of mortality or injury could occur in the form of vehicle or equipment strike. Indirect impacts could occur in the form of increased human/vehicular activity, noise, ground vibration, and increased dust as a result of construction activities. Implementation of **Mitigation Measures BIO-1 and BIO-2** would reduce these potential project-related impacts to a less than significant level.

Nesting Birds

Although no suitable habitat for nesting birds and raptors was identified on the project site, the disturbed Mojave creosote bush scrub and structures immediately adjacent to the project site (e.g., buildings, wooden electrical poles) could provide nesting habitat for avian species protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code, including burrowing owl and Le Conte's thrasher. If construction of the Proposed Project occurs during the bird breeding season (typically February 1 through August 31), ground-disturbing construction activities could indirectly affect birds protected by the MBTA and their nests through increased

human/vehicular activity, noise, ground vibration, and increased dust. Impacts to nesting birds would be less than significant with the implementation of **Mitigation Measure BIO-3**.

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?

No Impact. The project site is characterized by disturbed and developed land that supports mostly nonnative grass and forb species. No riparian habitat was identified within the project site. Although three drainages cross the project site, there is no riparian habitat associated with these drainages. Some willows were observed in a front yard of an adjacent residence, but these willows appeared to have been planted as ornamental landscaping and did not comprise an area that would be classified as riparian habitat. The project site does not contain any riparian habitat or sensitive natural communities that would need to be preserved (ECORP 2019b). No impact would occur.

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?

No Impact. The Proposed Project crosses three washes. A total of 1.41 acres of aquatic resources have been mapped within the project site. There were no suspected Waters of the U.S. (wetlands or non-wetlands) present within the project site. All mapped features are considered to be state-jurisdiction only. The Proposed Project as currently designed would not impact any recorded features, because the work is restricted to within the Sunburst Avenue paved portions and graded road shoulder (ECORP 2019c). No impact would occur.

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?

No Impact. The project site is located within and adjacent to areas containing existing disturbances (i.e., paved roads and residential and commercial development). The project site is heavily disturbed and/or developed and does not provide suitable habitat or cover that is conducive to the movement of wildlife. No migratory wildlife corridors or native wildlife nursery sites were identified within the project site. No impact would occur.

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

No Impact. Local policies and/or ordinance applicable to the project area include:

San Bernardino County Development Code (2007) section *88.01.060 Desert Native Plant Protection* details the protection of desert native plants, including:

1) All species of the family the following desert native plants with stems two inches or greater in diameter or six feet or greater in height:

    a) *Dalea spinosa* (smoketree).

    b) All species of the genus *Prosopis* (mesquites).

2) All species of the family *Agavaceae* (century plants, nolinas, yuccas).

3) Creosote Rings, 10 feet or greater in diameter.

4) All Joshua trees.

5) Any part of any of the following species, whether living or dead:

   a) *Olneya tesota* (desert ironwood).

   b) All species of the genus *Prosopis* (mesquites).

   c) All species of the genus *Cercidium* (palos verdes).

Joshua Tree's Community Plan Policy JT/CO 1.2 details the protection of Joshua trees, Mojave yuccas, and creosote rings.

As previously stated, the project site is heavily disturbed and/or developed which include areas that are graded with compacted soils and/or paved. The previously listed desert native plants would not be affected by the Proposed Project. No impact would occur.

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

No Impact. The project site is not located within a Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP). Therefore, development of the project site would not conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional or state HCP. No impact would occur.

Mitigation Measures

BIO-1 Pre-construction Survey for Burrowing Owl: A pre-construction survey for burrowing owl shall be conducted within project site and adjacent areas prior to the start of construction. The survey shall follow the methods described in the CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). The pre-construction burrowing owl survey shall be conducted between 30 and 14 days prior to initial ground disturbance (grading, grubbing, and construction). If burrowing owls or their sign (e.g., burrows with whitewash, pellets, bones of prey items) are identified during the pre-construction survey, then a second pre-construction survey will be conducted no more than 24 hours prior to initial ground disturbance. If burrowing owls and/or suitable burrowing owl burrows with sign (e.g., whitewash, pellets, feathers, prey remains) are identified on the project site during the survey(s) and impacts to those features are unavoidable, consultation with the CDFW shall be conducted and the methods described in the CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFW 2012) for avoidance and/or passive relocation shall be followed.

BIO-2 Pre-construction Survey for Desert Tortoise: A pre-construction survey for desert tortoise shall be conducted prior to the start of ground-disturbing activities in accordance with the protocol methods outlined in *Preparing for Any Action that May Occur within the Range of the Mojave Desert Tortoise* (USFWS 2018). If desert tortoises or desert tortoise sign (e.g., burrows, carcasses, scat) are observed on or immediately adjacent to the project site, then coordination with USFWS and CDFW will need to occur and avoidance or minimization measures, such as biological monitoring and no disturbance buffers around burrows, may need to be implemented.

If project-related impacts to the desert tortoise are found to be unavoidable and significant following the pre-construction survey, then the necessary state and federal permits will need to be obtained from CDFW and USFWS prior to the start of project activities.

BIO-3 **Pre-construction Nesting Bird Survey:** If construction or other project activities are scheduled to occur during the bird breeding season (typically February 1 through August 31 for raptors and March 15 through August 31 for the majority of migratory bird species), a pre-construction nesting bird survey shall be conducted by a qualified avian biologist to ensure that active bird nests, including those for the Le Conte's thrasher, will not be disturbed or destroyed. The survey shall be completed no more than three days prior to initial ground disturbance and may be combined with the second burrowing owl survey identified in Mitigation Measure BIO-1 if a second pre-construction burrowing owl survey is conducted on site. The nesting bird survey shall include the project site and adjacent areas where project activities have the potential to affect active nests, either directly or indirectly due to construction activity or noise. If an active nest is identified, the biologist shall establish an appropriately-sized disturbance limit buffer around the nest using flagging or staking. Construction activities shall not occur within any disturbance limit buffer zones until the nest is deemed inactive by the qualified biologist.

Biological Resources Impact Conclusions

With implementation of the above listed measures, less than significant impacts would occur.

5. CULTURAL RESOURCES

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

(Check if project is located in the Cultural ☐ overlays or cite results of cultural resource review)

Environmental Setting

A Cultural Resources Investigation was prepared by ECORP Consulting, Inc. for the Proposed Project to determine if cultural resources were present in or adjacent to the project site and assess the sensitivity of the project area for undiscovered or buried cultural resources (ECORP 2019d; Appendix D). The Cultural Resources Investigation consisted of a cultural resources records search, Native American Heritage Commission (NAHC) Sacred Lands File search, a field survey of the project area, and resource evaluations for the California Register of Historical Resources (CRHR) and the National Register of Historic Places (NRHP). The results of this report are summarized below.

Impact Analysis

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

No Impact. A cultural resources records search was completed at the South Central Coastal Information Center (SCCIC) at California State University, Fullerton in March 2019. The records search results indicated that two cultural resources were documented within the project site, which included a segment of historic-period Sunburst Avenue (P36-024659/CA-SBR-15700H) and a historic-period General Land Office (GLO) Survey marker (P36-020672). An additional 37 resources have been documented within a one-mile radius of the project site. The records search indicated that portions of the project site had been previously surveyed in 1974, 1975, 2009, and 2013 and 12 additional cultural resources investigations were conducted within the one-mile records search radius between 1974 and 2013. A search of the Sacred Lands File from the NAHC was completed in May 2019. The search results were negative, indicating no record for the presence of Native American Sacred Lands within the project area. In addition to the search of the Sacred Lands File, the NAHC identified eight Native American groups and individuals with historical and traditional ties to the project site.

As a result of the field survey, two historic-period utility line segments (SB-001 and SB-002) were documented and two previously recorded resources, a segment of Sunburst Avenue and a GLO quarter section marker, were field checked. The GLO quarter section marker was found to be no longer extant. A segment of Sunburst Avenue and the two newly recorded utility segments were evaluated as not eligible for inclusion in the CRHR and are therefore not Historical Resources as defined by CEQA (ECORP 2019d). Therefore, the Proposed Project would not result in impacts to a Historical Resource.

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

Less Than Significant with Mitigation Incorporated. Based on records search information and geologic maps of the area, there is a low potential to encounter subsurface archaeological material on the project site. The records search results information indicate that eight pre-contact resources have been previously recorded within a one-mile radius of the project site; however, it is unknown if any of those resources contain subsurface deposits. Geologic maps of the area show that the project site contains recent and older Pleistocene quaternary alluvium. Older Pleistocene sediments would predate human occupation of the region. While recent Pleistocene sediments are contemporaneous with the earliest known human occupation of the region, sites within areas containing these sediments are typically located on the surface, with a significantly lower potential for subsurface cultural deposits. Holocene sediments are more likely to contain evidence of human occupation than Pleistocene sediments. Additionally, the area contains no bedrock outcrops and does not contain resources (e.g., rivers, lakes, mesquite stands) that would suggest that it was a likely location of resource procurement. Therefore, the potential to encounter prehistoric subsurface cultural deposits is considered to be low (ECORP 2019d).

Although the archaeological sensitivity of the project site is considered to be low, there always remains some potential for ground-disturbing activities to expose previously unrecorded cultural resources. With the implementation of **Mitigation Measure CUL-1**, potential impacts to unanticipated cultural resources found during project construction would be less than significant.

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

Less Than Significant with Mitigation Incorporated. No known human remains are present on the project site. If human remains are inadvertently uncovered during project activities, adherence to **Mitigation Measure CUL-2** would reduce impacts to less than significant.

Mitigation Measures

CUL-1 Should unanticipated or inadvertent surface and/or subsurface prehistoric or historic archaeological resources, built environment, and/or tribal cultural resources, appear to be encountered during construction or maintenance activity associated with this project, then all work must halt within a 100-foot radius of the discovery until a qualified professional can evaluate the discovery. If the finds are archaeological or historic in nature, then an archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and/or historic archaeology have evaluated the significance of the find. This archaeologist shall have the authority to modify the no-work radius as appropriate, using professional judgment. The following shall apply, depending on the nature of the find:

A. If the professional archaeologist determines that the find *does not* represent a cultural resource, then work may resume immediately and no agency notifications are required.

B. If the professional archaeologist determines that the find *does* represent a cultural resource from any time or cultural affiliation then, depending on the nature of the discovery, appropriate treatment measures shall be developed.

C. If the find represents a Native American or potentially Native American resource that does not include human remains, which may or may not include a Tribal Cultural Resource, then the archaeologist shall consult with appropriate Tribe[s] on whether or not the resource represents either a Tribal Cultural Resource or a Historical Resource, or both, and, if so, consult on appropriate treatment measures. Preservation in place is the preferred treatment, if feasible. Work cannot resume within the no-work radius until the County, through consultation as appropriate, determines that the site either: 1) is not a Tribal Cultural Resource or Historical Resource; or 2) that the treatment measures for the Tribal Cultural Resource or Historical Resource have been completed.

CUL-2 If the find during construction or maintenance activity includes human remains, or remains that are potentially human, the archaeologist shall ensure reasonable protection measures are taken to protect the discovery from disturbance (AB 2641). The archaeologist shall notify the San Bernardino County Coroner (per §7050.5 of the Health and Safety Code). The Coroner's Office may be contacted at Coroner's Division, County of San Bernardino, 175 South Lena Road, San Bernardino, California 92415 or by calling 909.387.2978. The provisions of §7050.5 of the California Health and Safety Code, §5097.98 of the California Public Resources Code, and Assembly Bill 2641 will be implemented. If the Coroner determines the remains are Native American, the Coroner will notify the NAHC by telephone within 24 hours. The NAHC will then immediately notify the person it believes to be the Most Likely Descendant (MLD) of the remains (§5097.98 of the Public Resources Code). The designated MLD will have 48 hours, from the time access to the property is granted, to make recommendations concerning treatment of the remains, in accordance with California Health and Safety Code §7050.5 and CEQA Guidelines §15064.5(e). If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (§5097.94 of the Public Resources Code). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (§5097.98 of the Public Resources Code). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the county in which the property is located (AB 2641). Work may not resume within the no-work radius until the County, through consultation as appropriate, determines that the treatment measures have been completed to its satisfaction.

If the Coroner determines that the remains are not of Native American origin and that the remains are from the historic-era, the County Coroner will make a recommendation as to the disposition of the remains. Construction may continue once compliance with all relevant sections of the California Health and Safety Code has been addressed and an authorization to proceed is issued by the County Coroner.

Cultural Resources Impact Conclusions

With implementation of the above listed measures, less than significant impacts would occur.

6. ENERGY

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

Environmental Setting

Introduction

Energy consumption is analyzed in this Initial Study due to the potential direct and indirect environmental impacts associated with the Proposed Project. Such impacts include the depletion of nonrenewable resource (oil, natural gas, coal, etc.) due to the construction phase.

Electricity/Natural Gas Services

Southern California Edison provides electrical services to San Bernardino County through State-regulated public utility contracts. Southern California Edison, the largest subsidiary of Edison International, is the primary electricity supply company to much of Southern California. It provides 14 million people with electricity across a service territory of approximately 50,000 square miles.

The Southern California Gas Company provides natural gas services to the project area. Southern California Gas services approximately 21.6 million customers, spanning roughly 20,000 square miles of California.

Energy Consumption

Electricity is measured in kilowatt-hours (kWh), and natural gas is measured in therms. Vehicle fuel use is typically measured in gallons (e.g. of gasoline or diesel fuel), although energy use for electrician vehicles is measured in kWh.

The electricity consumption associated with all non-residential uses in San Bernardino County from 2013 to 2017 is shown in Table 6-1. As indicated, the demand has increased since 2013.

Table 6-1. Non-Residential Electricity Consumption in San Bernardino County 2013-2017

Year	Residential Electricity Consumption (kilowatt hours)
2017	10,062,005,941
2016	9,952,469,757
2015	9,806,131,162
2014	9,983,156,200
2013	9,678,784,604

Source: ECDMS 2018

The natural gas consumption associated with all non-residential uses in San Bernardino County from 2013 to 2017 is shown in Table 6-2. As indicated, the demand has increased since 2013.

Table 6-2. Non-Residential Natural Gas Consumption in San Bernardino County 2013-2017

Year	Residential Natural Gas Consumption (therms)
2017	257,879,077
2016	259,752,692
2015	245,499,027
2014	238,061,850
2013	239,507,329

Source: ECDMS 2018

Off-road (construction-related) fuel consumption in San Bernardino County from 2015 to 2019 is shown in Table 6-3. As indicated, off-road fuel consumption has increased since 2015.

Table 6-3. Automotive Fuel Consumption in San Bernardino County 2015-2019

Year	Off-Road Fuel Consumption (gallons)
2019	10,019,180
2018	9,657,613
2017	9,240,579
2016	9,045,689
2015	8,660,391

Source: CARB 2014

Impact Analysis

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

Less Than Significant. Addressing energy impacts requires an agency to make a determination as to what constitutes a significant impact. There are no established thresholds of significance, statewide or locally, for what constitutes a wasteful, inefficient, and unnecessary consumption of energy for a proposed land use project. For the purpose of this analysis, the amount of electricity and natural gas estimated to be consumed by the Proposed Project is quantified and compared to that consumed by non-residential land uses in San Bernardino County. Similarly, the amount of fuel necessary for project construction is calculated and compared to that consumed in the MDAB portion of San Bernardino County.

The analysis of electricity gas usage is based on California Emissions Estimator Model (CalEEMod) modeling conducted by ECORP Consulting (see Appendix A), which quantifies energy use for project operation. The amount of total construction-related fuel use was estimated using ratios provided in the Climate Registry's General Reporting Protocol for the Voluntary Reporting Program, Version 2.1. Energy consumption associated with the Proposed Project is summarized in Table 6-4.

Table 6-4. Proposed Project Energy and Fuel Consumption		
Energy Type	Annual Energy Consumption	Percentage Increase Countywide
Electricity Consumption[1]	0 kilowatt-hours	0.00 %
Natural Gas[1]	0 therms	0.00 %
Automotive Fuel Consumption		
• Project Construction[2]	81,379 gallons	0.80 %

Source: [1]Electricity and Natural Gas consumption calculated by ECORP Consulting using CalEEMod 2016.3.2; [2]Climate Registry 2016; [3]EMFAC2014 Notes: The Project increases in electricity and natural gas consumption are compared with all of the non-residential buildings in San Bernardino County in 2017, the latest data available. The Project increases in automotive fuel consumption are compared with the countywide fuel consumption in 2019, the most recent full year of data.

As shown in Table 6-4, there would be no increase in electricity usage or natural gas consumption compared to that of non-residential land uses as a result of the Proposed Project. The Proposed Project would not be increasing electricity or natural gas consumption, and thus would not result in the inefficient, wasteful, or unnecessary consumption of energy.

The Proposed Project's gasoline fuel consumption during the construction period is estimated to be 81,379 gallons of fuel, which would increase the annual construction-related gasoline fuel use in the MDAB-portion of the county by 0.80 percent during the time that project construction takes place. As such, project construction would have a nominal effect on local and regional energy supplies, especially over the long-term. Additionally, construction equipment fleet turnover and increasingly stringent state and federal regulations on engine efficiency combined with state regulations limiting engine idling times and require recycling of construction debris, would further reduce the amount of transportation fuel demand during project construction. For these reasons, it is expected that construction fuel consumption associated with the Proposed Project would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature.

For these reasons, this impact would be less than significant.

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

Less Than Significant. The Proposed Project would be designed in a manner that is consistent with relevant energy conservation plans designed to encourage development that results in the efficient use of energy resources. Relevant energy conservation plans specific to San Bernardino County include the City General Plan, specifically the Conservation Element. An overarching goal of this documents is to encourage energy conservation activities throughout the City, to be achieved through several policy provisions. Specifically, Policy CO 8.4 which aims to minimize energy consumption attributable to transportation within the County. All development in San Bernardino County, including the Proposed Project, is required to adhere to all City-adopted policy provisions, including those contained in the General Plan Conservation Element. The City ensures all provisions of these policy documents are incorporated into projects and their permits through development review and applications of conditions of approval as applicable. The Proposed Project would not conflict or obstruct any local or state plans for renewable energy or energy efficiency.

For these reasons, this impact would be less than significant.

Mitigation Measures

None.

Energy Impact Conclusions

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

7. GEOLOGY AND SOILS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury death involving?				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	
ii. Strong seismic ground shaking?			X	
iii. Seismic-related ground failure, including liquefaction?				X
iv. Landslides?				X
b) Result in substantial soil erosion or the loss of topsoil?			X	
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?			X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			X	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?			X	
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		

(☒Check if project is located in the Geologic Hazards ☐ or Paleontologic Resources ☐Overlay District):

Environmental Setting

The Joshua Tree Plan Area is located approximately 76 miles east of San Bernardino, and 32 miles north and east of Palm Springs within the Desert Region of the County. The Desert Region comprises that area of the County that is to the north and east of the San Bernardino and San Gabriel Mountains. This region, which by far encompasses the largest area of the County, includes most of the Mojave Desert and a portion of the Basin and Range geomorphic provinces of California. The Desert Region is characterized by mountain ranges and hills of moderate relief that are partially buried and separated by broad alluviated basins. The mountain ranges and hills are chiefly comprised of Mesozoic age granitic rocks and Mesozoic to Precambrian age metamorphic rocks. Cenozoic age sedimentary and volcanic rocks and landforms are common throughout the Desert Region (County of San Bernardino 2007a).

Impact Analysis

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Less Than Significant. The Pinto Mountain Fault and its associated Alquist Priolo Earthquake Fault Zone bisect the project site just south of the intersection of Sunburst Avenue and Crestview Drive (County of San Bernardino 2005; CDC 2019). Although the Proposed Project would directly overlay an Alquist-Priolo Earthquake Fault Zone, the proposed pedestrian and bicycle trails would not exacerbate the risks to trail users because trail users are transitory. Furthermore, the Proposed Project does not include structures that would encourage large densities of users to gather. As such impacts would be less than significant.

ii. Strong seismic ground shaking?

Less Than Significant. As previously stated, the project site is bisected by the Pinto Mountain Fault. In the event of an earthquake strong ground shaking is expected to occur on the project site. The Proposed Project does not propose the construction of habitable structures and therefore would not expose people or structures to strong seismic ground shaking greater than what currently exists. Trail design and construction would comply with current building codes and standards which would reduce the risk of loss, injury, or death resulting from strong ground-shaking. Impacts would be less than significant.

iii. Seismic related ground failure, including liquefaction?

No Impact. Liquefaction is a phenomenon where water-saturated granular soil loses shear strength during strong ground shaking produced by earthquakes. The loss of soil strength occurs when cyclic pore water pressure increases below the groundwater surface. Potential hazards due to liquefaction include the loss of bearing strength beneath structures, possibly causing foundation failure and/or significant settlements. Liquefaction susceptible sites are limited to areas of the County underlain by loose, unconsolidated granular soils, and shallow groundwater, typically 50 feet or less below ground surface (County of San Bernardino 2007a). The project site is not located within the liquefaction potential zone. The Proposed Project is not anticipated to directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving seismic related ground failure including liquefaction. No impact would occur.

iv. Landslides?

No Impact. Landslides are less of a concern in the Desert Region of the County due in part to the low annual precipitation levels. However, with relatively steep slopes in some of the desert mountain ranges there is the potential for landslides to occur, particularly during an earthquake (County of San Bernardino 2005). The project area is relatively flat with the exception of Bartlett Mountains located to the west of the project site near the middle portion of the trail alignment. The proposed trails are not located directly adjacent to Bartlett Mountains. As such, the project site is not at risk for landslides. No impact would occur.

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

Less Than Significant. Implementation of the Proposed Project would require ground-disturbing activities, such as grading, that could potentially result in soil erosion or loss of topsoil. Construction of the Proposed Project would be required to comply with the Construction General Permit, either through a waiver or through preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP). Best Management Practices (BMPs)

are included as part of the SWPPP prepared for the Proposed Project and would be implemented to manage erosion and the loss of topsoil during construction-related activities. The Proposed Project's grading plan would also ensure that the proposed earthwork is designed to avoid soil erosion. Impacts as a result of soil erosion or the loss of topsoil would be less than significant.

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

Less Than Significant. Please refer to the responses to questions 7a, above. No habitable structures would be constructed as part of the Proposed Project. Impacts related to an unstable geological unit or soil resulting in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse would be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Less Than Significant. Expansive soils are soils with a significant amount of clay particles that have the ability to give up water (shrink) or take on water (swell). Fine-grained soils, such as silts and clays, may contain variable amounts of expansive clay minerals. When these soils swell, the change in volume exerts significant pressures on loads that are placed on them. This shrink/swell movement can adversely affect building foundations, often causing them to crack or shift, with resulting damage to the buildings they support.

Field observations of the soils within the various features connoted a heavy presence of sands, with some smaller elements of silt. As such, soils on the project site do not exhibit the characteristics of expansive soils. Impacts would be less than significant.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The Proposed Project does not include septic tanks or alternative waste water disposal systems. No impact would occur.

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

Less Than Significant with Mitigation Incorporated. A paleontological resources assessment was completed for the Proposed Project (ECORP 2019f). The assessment's scope included a paleontological records search through the Natural History Museum of Los Angeles County's Vertebrate Paleontology Section (LACM), a pedestrian survey, a literature search, correspondence with a former curator at the San Bernardino County Museum, a review of geological maps and County of San Bernardino regulations, and impact analyses.

The project site is located within the Transverse Ranges Geomorphic Province of California. Generally speaking, the lower parts of the project alignment are washes with Quaternary alluvium (Qa) of late Pleistocene and Holocene age. The higher parts are alluvial fans of older Quaternary alluvium (Qoa) of Pleistocene age. The higher alluvial fans are dissected by younger Quaternary drainages. Beginning at SR-62, the alignment is in Qa up to the middle of section 25. It crosses a narrow ridge of Qoa, and returns to Qa. Within the last quarter mile of section 25, it passes into Qoa and this continues to the middle of section 24. There it passes into a narrow channel of Qa and returns to Qoa for the remainder of the alignment (ECORP 2019f).

The records search revealed that the nearest LACM locality is approximately ten miles to the north. This locality produced Pleistocene fossils of horse (*Equus*), small and large camels (*Taupolama* and *Camelops*), as well as bison (*Bison*). Two more localities are near Campbell Hill northeast of Twentynine Palms. Horse fossils were found there. LACM recommended that excavations in the project area should be monitored to recover any fossil remains discovered.

No fossils were detected during the pedestrian survey. Surficial sediments observed during the field survey were all alluvium and colluvium. No paleosols were detected. No calcium carbonate lumps that might indicate nearby fossil soils were observed. A 3-foot pit at was dug in sediments mapped as Qoa and no fossils or fossil soils were detected (ECORP 2019f).

Based on the project location in sediments listed as Pleistocene age and the results of the records search indicating fossils have been recorded in the project vicinity in Pleistocene age sediments, the Proposed Project may encounter paleontological resources during ground disturbing construction activities. The County of San Bernardino Conservation Element lists several programs for Cultural/Paleontological Resources including requiring paleontological monitoring of projects located in areas of known fossil occurrences and that would have rough grading with cuts greater than three feet. Excavation associated with the Proposed Project is not anticipated to exceed three feet. However, if excavation exceeds three feet potentially significant impacts to unique paleontological resources or sites or unique geologic features may occur if disturbed during construction activities. With the implementation of Mitigation Measure GEO-1 impacts would be less than significant.

Mitigation Measures

GEO-1 If project excavations exceed three feet in depth in sediments mapped as Quaternary alluvium (Qoa) then a Paleontological Resource Impact Management Plan shall be prepared by a qualified paleontologist. This plan shall adhere to the guidelines of the Society of Vertebrate Paleontology and shall include monitoring and sampling of sediments to test for microvertebrate fossils.

Geology and Soils Impact Conclusions

With implementation of the above listed measures, less than significant impacts would occur.

8. GREENHOUSE GAS EMISSIONS

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

Background

Greenhouse Gas (GHG) emissions are released as byproducts of fossil fuel combustion, waste disposal, energy use, land use changes, and other human activities. This release of gases, such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and chlorofluorocarbons, creates a blanket around the earth that allows light to pass through but traps heat at the surface, preventing its escape into space. While this is a naturally occurring process known as the greenhouse effect, human activities have accelerated the generation of GHGs beyond natural levels. The overabundance of GHGs in the atmosphere has led to an unexpected warming of the earth and has the potential to severely impact the earth's climate system.

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. CH_4 traps over 25 times more heat per molecule than CO_2, and N_2O absorbs 298 times more heat per molecule than CO_2. Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO_2e). Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

The local air quality agency regulating the MDAB is the MDAQMD, the regional air pollution control officer for the basin. Under CEQA, the MDAQMD is an expert commenting agency on air quality and related matters within its jurisdiction or impacting on its jurisdiction. The MDAQMD provides guidelines to assessing the significance of project specific GHG emissions and offers both daily and annual thresholds for GHG emissions

In September of 2011, the County of San Bernardino adopted the San Bernardino GHG Reduction Plan (GHG Plan) based on the premise that the County and the community it represents are uniquely capable of addressing emissions associated with sources under the County's jurisdiction and that the County's emission reduction efforts should coordinate with the state strategies of reducing emissions in order to reduce emissions in an efficient and cost-effective manner. The GHG Reduction Plan also including an interim screening level numeric "bright-line" threshold of 3,000 metric tons of CO_2e annually for project operations and construction.

Impact Analysis

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

Less Than Significant.

Construction

Construction-related activities that would generate GHGs include worker commute trips, haul trucks carrying supplies and materials to and from the project site, and off-road construction equipment (e.g., dozers, loaders, excavators). Projected GHG emissions from construction have been quantified and amortized over the life of the Proposed Project. Table 8-1 illustrates the specific construction-generated GHG emissions that would result from construction of the Project.

Table 8-1. Construction-Related Greenhouse Gas Emissions

Emissions Source	CO_2e (Metric Tons/ Year)
Year 2020	826
County of San Bernardino GHG Reduction Plan	3,000
Exceed Threshold?	No

Source: CalEEMod version 2016.3.2. Refer to Appendix A for Model Data Outputs.
Notes: Emission estimates account for the grading of 84,480 square feet as well as the removal of 1,016 tons of debris.

As shown in Table 8-1, Proposed Project construction would result in the generation of approximately 826 metric tons of CO_2e over the course of construction. Proposed Project emissions do not exceed the County of San Bernardino Greenhouse Gas Emissions Reduction Plan screening threshold of 3,000 metric tons of CO_2e per year. Therefore, the impact is less than significant.

Operations

In terms of operational GHG emissions, the Proposed Project involves the construction of two miles of bike lanes and paths. The Proposed Project would not include the provision of new permanent stationary or mobile sources of emissions, and therefore, by its very nature, would not generate quantifiable GHG emissions from project operations. The Proposed Project does not propose any buildings and therefore no permanent source or stationary source emissions. Furthermore, the Proposed Project could be expected to reduce vehicle trips in the area due to its ability meet the identified need for a non-vehicular trail for the local residents in the community. This potential reduction of automobile trips attributable to the Proposed Project would reduce the amount of daily CO_2e emissions currently being generated. Thus, there would be no operational impact related to air quality.

Impacts would be less than significant.

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

Less Than Significant. The County of San Bernardino GHG Reduction Plan establishes a GHG emissions reduction target for the year 2020 that is 15 percent below year 2007 emission levels. The GHG Plan is consistent with AB 32 and sets the County on a path to achieve a more substantial long-term reduction in the post-2020 period. Achieving this level of emissions would ensure that the contribution to GHG emissions from activities covered by the GHG Reduction Plan would not be cumulatively considerable. As described in Chapter 4.0 of the GHG Plan, all new development under the jurisdiction of the County is required to quantify a project's GHG emissions and adopt feasible mitigation to reduce project emissions below a level of significance.

The County GHG Reduction Plan identifies a review standard of 3,000 metric tons of CO_2e per year to identify and mitigate project emissions. Projects estimated to generated less than 3,000 metric tons of CO_2e per year are considered less than significant. For projects exceeding 3,000 metric tons of CO_2e per year, the developer may use the GHG Reduction Plan Screening Tables in the GHG Reduction Plan as a tool to assist with calculating GHG reduction measures and the determination of a significance finding. Projects that garner 100 or more points on the Screening Tables are considered less than significant. (The point system was devised to ensure project compliance with the reduction measures in the GHG Plan such that the GHG emissions from new development, when considered together with those from existing development, would allow the County to meet its year 2020 target and support longer-term reductions in GHG emissions beyond year 2020.)

As shown in Table 8-1, above, the total amount of proposed GHG emissions would be 826 metric tons of CO_2e per year, which does not exceed the County's 3,000 metric tons of CO_2e per year screening threshold. Therefore, the Proposed Project would not conflict with the San Bernardino Greenhouse Gas Emissions Reduction Plan. No impact would occur.

For these reasons, this impact would be less than significant.

Mitigation Measures

None.

Greenhouse Gas Emissions Impact Conclusions

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

9. HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
g) Expose people or structures, either directly or indirectly, to a significant risk loss, injury or death involving wildland fires?				X

Environmental Setting

The County of San Bernardino has an Emergency Operations Plan (EOP), which addresses the County's response to emergencies associated with natural disasters or human-caused emergencies. The EOP describes the methods for conducting emergency operations, the process for rendering mutual aid, the emergency services of governmental agencies, how resources are mobilized, how the public will be informed, and the process to ensure continuity of government during an emergency or disaster.

Impact Analysis

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

Less Than Significant. The construction phase of the Proposed Project may include the transport, storage, and short-term use of petroleum-based fuels, lubricants, pesticides, and other similar materials. The transport of hazardous materials by truck is regulated by federal safety standards under the jurisdiction of the U.S. Department of Transportation. Additionally, the implementation of Best Management Practices (BMPs)

stipulating proper storage of hazardous materials and vehicle refueling would be implemented during construction as part of the Stormwater Pollution Prevention Plan (SWPPP). All transport, handling, use, and disposal of substances such as petroleum products paints, and solvents related to the operation and maintenance of the Proposed Project would comply with all Federal, State, and local laws regulating management and use of hazardous materials. Therefore, the use of such material would not create a significant hazard to the public and impacts would be less than significant.

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?

Less Than Significant. On-site storage and/or use of large quantities of hazardous materials capable of affecting soil and groundwater are not proposed. However, during construction some hazardous materials, such as diesel fuel, would be used. A SWPPP, listing BMPs to prevent construction pollutants and products from violating any water quality standard or waste discharge requirements would be prepared for the Proposed Project. The potential risk associated with accidental discharge during use and storage of equipment-related hazardous materials would be low since the handling of such materials would be addressed through the implementation of BMPs. With the implementation of BMPs, the Proposed Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous material. Impacts would be less than significant.

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

Less Than Significant. Joshua Tree Elementary School is located at the southwest corner of Sunburst Avenue and Calle Los Amigos, adjacent to the proposed trail. As stated in the responses to questions a) and b), construction of the Proposed Project may include the transport, storage, and short-term use of petroleum-based fuels, lubricants, and other similar materials. All transport, handling, use, and disposal of hazardous materials related to the operation and maintenance of the Proposed Project would comply with all Federal, State, and local laws regulating management and use of hazardous materials. Furthermore, BMPs would be implemented as part of the Proposed Project's SWPPP to prevent the release of construction pollutants and/or products. Also, as discussed in Section 3, Air Quality, emissions from construction activities would be below significant thresholds. Impacts would be less than significant.

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?

No Impact. A search of the Department of Toxic Substances Control's (DTSC) Hazardous Waste and Substance List (Cortese List) and EnviroStor online database and the State Water Resources Control Board's (SWRCB) GeoTracker online database was conducted for the project area (DTSC 2019a and 2019b; SWRCB 2019). The results of the searches indicate that there are no known hazardous materials sites on the project site. No impact would occur.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No Impact. Yucca Valley Airport is the closest airport to the project site located five miles to the west. The project site is not within the Airport Comprehensive Land Use Plan for the Yucca Valley Airport. Given the distance between the airport and the project site there would be no safety hazards for people residing or working in the project area. No impact would occur.

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

No Impact. The Proposed Project is a pedestrian/bicycle trail. The trail is proposed along the ROW of Sunburst Avenue. The trail would not conflict with access and/or circulation of emergency vehicles in response to an emergency and/or evacuation. No impact would occur.

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

No Impact. The project site is not located within Cal Fire State Responsibility Area (Cal Fire 2019). The project site is also not identified to be in a fire hazard zone within the Safety Background Report of the County's General Plan (County of San Bernardino 2005). No impact would occur.

Mitigation Measures

None.

Hazards and Hazardous Materials Impact Conclusions

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

10. HYDROLOGY AND WATER QUALITY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?			X	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would?				
I. Result in substantial erosion or siltation on – or off-site;			X	
II. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on – or off-site;			X	
III. Create or contribute runoff water which would exceed the capacity of the existing or planned stormwater drainage systems or provide substantial additional resources of polluted runoff; or			X	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				X

Environmental Setting

The project area is located at approximately 2,741 feet above mean sea level (AMSL) to 2,693 feet AMSL in the Mojave Desert Subregion of the Desert Floristic Province (Baldwin et. al. 2012). Several seasonal drainages cross the project area. Vegetation within the project area consists primarily of creosote, bursage, and Joshua tree. The channels crossing the project area correspond with historically recorded drainages from USGS topographic mapping and National Wetland Inventory mapping. Where larger drainages cross Sunburst Avenue, there are low-flow crossings present along with some armoring to prevent roadway erosion. Many of the smaller drainage features do not cross Sunburst Avenue but only occur along the east side, collecting runoff mostly from along the road.

The project area consists of a developed roadway and dirt shoulder, along with a buffer of approximately 50 feet into the surrounding area. The road shoulder is compacted and a small berm is present along the edge of the shoulder. In some locations, dirt roads run parallel along Sunburst Avenue. Surrounding land uses are primarily undeveloped areas along with a few rural residential lots. Development is more prevalent in the southern portions of the DA, adjacent to SR-62.

The project area is composed of disturbed areas, developed areas, and disturbed Mojave creosote bush scrub. Some portions of the project area were disturbed from unauthorized trash dumping and off-highway vehicle (OHV) use. No special-status habitats or vegetation communities were observed within or adjacent to the project area.

Impact Analysis

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

Less Than Significant. During construction of the Proposed Project water quality impacts could occur without proper controls. Soils loosened during grading, as well as spills of fluids or fuels from vehicles and equipment, if mobilized or transported offsite in overland flow, have the potential to degrade water quality. Because the area of disturbance affected by construction of the Proposed Project exceeds one acre, the Proposed Project would be subject to the requirements of the statewide National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Permit). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation. During construction, to comply with the General Permit the County would be required to implement a SWPPP, which would include BMPs to prevent construction pollutants and products from violating any water quality standards or any waste discharge requirements. During operations the Proposed Project would not involve uses that would result in waste discharges that could degrade surface or groundwater quality. Impacts would be less than significant.

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

Less Than Significant. The Proposed Project would rehabilitate an existing bicycle trail and construct a new bicycle trail on both the east and west sides of Sunburst Avenue. The proposed trails would be paved and be located entirely within the existing ROW of Sunburst Avenue. The addition of these trails is not anticipated to result in a substantial increase of impervious surface area to the overall watershed of where the Proposed Project is located that could affect groundwater recharge. Stormwater runoff from the trail would be directed to adjacent areas that contain pervious surfaces where groundwater recharge would continue to occur. As such, impacts would be less than significant.

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

I. Result in substantial erosion or siltation on – or off-site;

II. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off-site;

III. Create or contribute runoff water which would exceed the capacity of the existing or planned stormwater drainage systems or provide substantial additional resources of polluted runoff?

Less Than Significant.

I. The Proposed Project would not significantly alter the existing drainage pattern of the project site. However, erosion and siltation can occur as a result of ground disturbing activities during construction. With implementation of BMPs as part of the Proposed Project's SWPPP impacts would be less than significant.

II. Development of the Proposed Project would result in the creation of paved trails which would result in an increase of impervious surfaces in the project site compared to existing conditions. The addition of impervious surfaces to an area can affect the rate or amount of surface runoff. However, the proposed improvements are not anticipated to result in a substantial increase of impervious surface

area in the project area. Areas adjacent to the paved trail would continue to have permeable surfaces (natural ground cover), where stormwater runoff would be directed to allowing runoff to infiltrate similar to existing conditions. As such, the flooding potential of the project area is not anticipated to be exacerbated due to the implementation of the Proposed Project. Impacts would be less than significant.

III. As previously mentioned, the Proposed Project would implement BMPs as part of the project's SWPPP during construction to minimize water quality impacts. During project operations BMPs would also be implemented as part of the Proposed Project Water Quality Management Plan (WQMP). Impacts would be less than significant.

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

No Impact. The project site is bisected by two creeks; Yucca Creek and Joshua Tree Creek. The two creeks and associated 100-year flood hazard areas are identified in the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Map Number 06071C8145J. The construction of paved bicycle/pedestrian trails are not anticipated to impede flood flows. As such, no impact to flood hazards are anticipated.

The project site is located approximately 90 mile inland from the Pacific Ocean. Additionally, no major surface water bodies are located in the project vicinity. Due to the distance to the ocean and large bodies of water, the project site would not be subject to inundation from seiches or tsunamis. No impact would occur.

Mitigation Measures

None.

Hydrology and Water Quality Impact Conclusions

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

11. LAND USE AND PLANNING

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

Environmental Setting

The project site is located along Sunburst Street from SR-62 to Calle Los Amigos (approximately 2 miles). This segment of Sunburst Avenue is a paved two-lane street with unpaved road shoulders. There is an existing paved Class I bike path located along the east side of Sunburst Avenue from SR-62 north to Oleander Avenue (approximately 0.5 miles). The project site is generally located within an area characterized by rural residential development interspersed with undeveloped properties and a few commercial and institutional land uses (Sportsman's Park, Joshua Tree Park & Recreation District). The Proposed Project would be located entirely within the ROW of Sunburst Avenue. As identified by the County of San Bernardino Land Use Plan, land use zoning districts located immediately adjacent to the trail alignment include: General Commercial (CG-SCp); Multiple Residential (RM); Institutional (IN); Single Residential (RS); and Rural Living (RL).

Impact Analysis

a) Physically divide an established community?

No Impact. The Proposed Project is the rehabilitation of an existing Class I bike path and the construction of new Class II bike lanes within the existing ROW of Sunburst Avenue. The Proposed Project would provide a benefit to the community by providing pedestrian/bicycle trails giving area residents and visitors an alternative mode of transportation. No impact would occur.

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

No Impact. The Proposed Project is the development of recreational pedestrian and bicycle trails along Sunburst Avenue in the community of Joshua Tree. The Proposed Project is consistent with the Joshua Tree Community Plan (County of San Bernardino 2007b). Specifically, the Proposed Project would be consistent with, but not limited to, the following goals and policies of the Joshua Tree Community Plan:

- **Goal JT/OS 1.** Develop parks, recreation facilities and a non-motorized trail system to meet the recreational needs of the community.

- **Goal JT/CI 2.4.** Where feasible, establish and coordinate a separate system of bikeway and pedestrian trails connecting residential areas, recreational facilities, activity centers, downtown Joshua Tree and the entrance to the National Park.

- **Goal JT/CI 2.6.** Provide bicycle lanes adjacent to Twentynine Palms Highway and throughout the planning area, with safe crossing areas.

- **Goal JT/CI 4.** Promote alternative modes of transportation.

The Proposed Project would result in beneficial impacts to the community of Joshua Tree.

Mitigation Measures

None.

Land Use and Planning Impact Conclusions

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

12. MINERAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
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?				X

Environmental Setting

There are no active production mines in the community of Joshua Tree (County of San Bernardino 2006a).

Impact Analysis

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. There are no active mines within or adjacent to the project site. Furthermore, there are no properties with a Resource Conservation land use designation adjacent to the project site. The Proposed Project would be located entirely within the ROW of Sunburst Avenue. As such, the Proposed Project would not result in the loss of availability of a known mineral resource. No impact would occur.

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

No Impact. There are no mineral resources identified in the project area by the Joshua Tree Community Plan or the County General Plan. As previously mentioned, the Proposed Project would be located entirely within the ROW of Sunburst Avenue. No impact to locally important mineral resource recovery sites would occur.

Mitigation Measures

None.

Mineral Resources Impact Conclusions

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

13. NOISE

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

Environmental Setting

A noise impact assessment was completed for the Proposed Project (ECORP Consulting 2019e). This technical report is provided in Appendix E and summarized below.

Noise Fundamentals

Noise is generally defined as sound that is loud, disagreeable, or unexpected. The selection of a proper noise descriptor for a specific source is dependent on the spatial and temporal distribution, duration, and fluctuation of the noise. The noise descriptors most often encountered when dealing with traffic, community, and environmental noise include the average hourly noise level (in L_{eq}) and the average daily noise levels/community noise equivalent level (in L_{dn}/CNEL).

Noise can be generated by a number of sources, including mobile sources, such as automobiles, trucks, and airplanes, and stationary sources, such as construction sites, machinery, and industrial operations. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. Mobile transportation sources, such as highways, and hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3.0 decibels (dBA) per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance from the source. Noise generated by stationary sources typically attenuates at a rate of approximately 6.0 to 7.5 dBA per doubling of distance from the source.

Sound levels can be reduced by placing barriers between the noise source and the receiver. In general, barriers contribute to decreasing noise levels only when the structure breaks the “line of sight” between the source and the receiver. Buildings, concrete walls, and berms can all act as effective noise barriers. Wooden fences or broad areas of dense foliage can also reduce noise but are less effective than solid barriers.

Sensitive Noise Receptors

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of

individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

The project site traverses' numerous noise-sensitive land uses including multiple single-family residences and Joshua Tree Elementary School. The nearest noise-sensitive receptor to the project site is a single-family residence located 25 feet to the west near the intersection of Sunburst Avenue and Commercial Street. However, there are numerous other residences existing directly adjacent to the project site.

Existing Ambient Noise Environment

The noise environment in the project area is impacted by various noise sources. Mobile sources of noise, especially cars and trucks traveling on Sunburst Avenue and SR 62, are the most common and significant sources of noise in the project area. Other sources of noise are typical activities associated with residential neighborhoods (barking dogs, lawnmowers, neighborhood automobile movements). The nearest active airport to the project site is the Twentynine Palms Strategic Expeditionary Landing Field located approximately 12.5 miles northeast of the project site.

Impact Analysis

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant. Construction noise associated with the Proposed Project would be temporary and would vary depending on the nature of the activities being performed. Noise generated would primarily be associated with the operation of off-road equipment for on-site construction activities as well as construction vehicle traffic on area roadways. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., demolition, grading, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). During construction, exterior noise levels could negatively affect sensitive receptors in the vicinity of the construction site.

Table 13-1 indicates the anticipated noise levels of construction equipment. The average noise levels presented in Table 13-1 are based on the quantity, type, and acoustical use factor for each type of equipment that is anticipated to be used.

Table 13-1. Maximum Noise Levels Generated by Construction Equipment

Type of Equipment	Maximum Noise (L_{max}) at 50 Feet (dBA)	Maximum 8-Hour Noise (L_{eq}) at 50 Feet (dBA)
Crane	80.6	72.6
Dozer	81.7	77.7
Excavator	80.7	76.7
Generator	80.6	77.6

Table 13-1. Maximum Noise Levels Generated by Construction Equipment		
Type of Equipment	Maximum Noise (L_{max}) at 50 Feet (dBA)	Maximum 8-Hour Noise (L_{eq}) at 50 Feet (dBA)
Grader	85.0	81.0
Paver	77.2	74.2
Roller	80.0	73.0
Tractor	84.0	80.0
Dump Truck	76.5	72.5
Concrete Pump Truck	81.4	74.4
Welder	74.0	70.0

Source: Federal Highway Administration, Roadway Construction Noise Model (FHWA-HEP-05-054), dated December 2008.

The nearest noise-sensitive land user to the project site is a single-family residence located 25 feet to the west. Due to the close proximity, the residence will experience noise levels in excess of what is presented in Table 13-1.

The County does not promulgate numeric thresholds pertaining to the noise associated with construction but instead limits the time that construction can take place. Specifically, Section 83.01.080 expects noise from temporary construction, maintenance, repair or demolition activities between 7 a.m. and 7 p.m., except Sundays and Federal holidays. It is typical to regulate construction noise in this manner since construction noise is temporary, short term, intermittent in nature, and would cease on completion of the Project. Therefore, noise generated during construction activities, as long as conducted within the permitted hours, would not exceed County noise standards.

The Proposed Project consists of rehabilitation and construction of a bike path and lane. People using the trail for recreational activities (e.g., walking, running, cycling) would be the main source of noise for the Proposed Project. However, the trail users will be continuously moving along the trail and would not be concentrated at the point closest to the sensitive receptors. Furthermore, noise generated by people using the trail would be lower than ambient noise levels currently experienced from existing vehicular traffic, so nearby sensitive receptors will not notice a change in noise levels.

This impact is less than significant.

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

Less Than Significant. Excessive groundborne vibration impacts result from continuously occurring vibration levels. Increases in groundborne vibration levels attributable to the Proposed Project would be primarily associated with short-term construction-related activities. Construction on the project site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance.

Construction-related ground vibration is normally associated with impact equipment such as pile drivers, jackhammers, and the operation of some heavy-duty construction equipment, such as dozers and trucks (pile drivers are not necessary for the completion of the Proposed Project). Vibration decreases rapidly with distance and it is acknowledged that construction activities would occur throughout the project site and would not be concentrated at the point closest to sensitive receptors. Groundborne vibration levels associated with construction equipment are summarized in Table 13-2.

Table 13-2. Representative Vibration Source Levels for Construction Equipment	
Equipment Type	Peak Particle Velocity at 25 Feet (inches per second)
Large Bulldozer	0.089
Caisson Drilling	0.089
Rock Breaker	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer/Tractor	0.003

Source: Caltrans 2004

The nearest structure to the project site is approximately 25 feet away. Based on the vibration levels presented in Table 13-2, groundborne vibration generated by construction equipment would not be anticipated to exceed 0.089 in/sec PPV at 25 feet. The County's Development Code Section 83.01.090 prohibits the operation of any device that creates vibration greater than or equal to 0.2. inches per second measured beyond the property line. The use of any construction equipment listed above would not result in a groundborne vibration velocity level above County standards. The predicted vibration levels at the nearest structures would not exceed County standards.

Operation of the Proposed Project would not include the use of any stationary equipment that would result in excessive vibration levels. Therefore, the Proposed Project would result in no groundborne vibration impacts during operations.

This impact is less than significant.

c) *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

Less Than Significant. The Project site is located approximately 12.5 miles northeast of the Twentynine Palms Strategic Expeditionary Landing Field. It is not within two miles of a public or private airport. Implementation of the Proposed Project would not affect airport operations nor result in increased exposure of noise-sensitive receptors to aircraft noise. No impact.

Mitigation Measures

None.

Noise Impact Conclusions

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

14. POPULATION AND HOUSING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

Environmental Setting

The Proposed Project is located in the unincorporated community of Joshua Tree, San Bernardino County, California. Joshua Tree is located approximately 76 miles east of San Bernardino and 32 miles northeast of Palm Springs. Joshua Tree has a population of 7,414 (US Census Bureau 2019). The rural desert character of the Joshua Tree community is defined in part by the geographic location, desert environment and low-density residential development. Residential development within the Joshua Tree community is characterized by large lots, the varied placement of homes, and open spaces around the homes. The character of the community is further defined by the natural environment and by the limited commercial and industrial uses.

Impact Analysis

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Impact. The Proposed Project is the rehabilitation of an existing Class I bike path and the construction of new Class II bike lanes. The Proposed Project would not result in new residential uses or result in a permanent increase in employment opportunities in the area capable of inducing population growth. No impact would occur.

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

No Impact. Currently, there are no homes located within the project site. The project site is located entirely within the ROW of Sunburst Avenue. As such, the Proposed Project would not displace housing. No impact would occur.

Mitigation Measures

None.

Population and Housing Impact Conclusions

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

15. PUBLIC SERVICES

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

Environmental Setting

Fire protection services within the project area are provided by the San Bernardino County Fire Department (SBCFD), which provides administration and support for the fire districts and other services such as hazardous materials regulation, dispatch communication, and disaster preparedness. The closest fire station to the project site is SBCFD Fire Station 36 located approximately 0.5 mile to the southwest along Park Boulevard.

The San Bernardino County Sheriff's Department provides police protection services to the project area. The closest sheriff's station is the Morongo Basin Station located approximately two miles to the east along SR-62.

The Morongo Basin Unified School District serves Joshua Tree and the surrounding communities. The closest school to the project site is Joshua Tree Elementary School located at the southwest corner of Sunburst Avenue and Calle Los Amigos.

Impact Analysis

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

Less Than Significant. The Proposed Project is the rehabilitation of an existing Class I bike path and the construction of new Class II bike lanes. The proposed improvements would result in approximately two miles of bicycle trails along Sunburst Avenue. Operation of the Proposed Project could result in an occasional demand for emergency response from the fire and/or police departments. However, such demand is not expected to exceed the current capacity of the fire and police departments. The Proposed Project would not create the need for new or expanded fire or police facilities and/or services. Impacts would be less than significant.

The Proposed Project is not anticipated to induce population growth; therefore, it would not create additional demand for schools, parks, or other public facilities. No impact would occur.

Mitigation Measures

None.

Public Services Impact Conclusions

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

16. RECREATION

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

Environmental Setting

The community of Joshua Tree is located adjacent to large sections of Bureau of Land Management (BLM) lands and Joshua Tree National Park. Approximately 17 percent of the land within the Joshua Tree Community Plan boundary is BLM land. Joshua Tree National Park provides opportunities for camping, rock climbing, nature viewing, etc. and is a major tourist attraction for the region, attracting approximately 1.2 million visitors per year. Section Six is a 605 acre area designated as Resource Conservation (RC) that is managed by County Service Area 20. Section Six provides recreational day use opportunities for locals and visitors. The Joshua Tree Community Plan Area currently does not contain any County-maintained trails that are specifically designated as recreational facilities (County of San Bernardino 2007b).

Impact Analysis

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

Less Than Significant. The Proposed Project would not result in the increase of the region's population because it does not include housing and would not result in the creation of a significant number of permanent jobs. Therefore, no direct increase in the use of existing neighborhood and regional parks or other recreational facilities would occur. The proposed trail could would improve pedestrian and bicycle user access to Sportsman Park, located adjacent to the Proposed Project. However, the Proposed Project is not anticipated to substantially increase the use of the park. Impacts would be less than significant.

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?

Less Than Significant With Mitigation Incorporated. The Proposed Project is the development of recreational pedestrian and bicycle trails along Sunburst Avenue in the community of Joshua Tree. Adverse physical effects from the construction of the Proposed Project are discussed in this Initial Study. Where potentially significant impacts have been identified, mitigation measures are proposed to reduce impacts to a less than significant level.

Mitigation Measures

Mitigation measures required for this Project are provided in the appropriate sections of this Initial Study.

Recreation Impact Conclusions

With implementation of the mitigation measures included as part of this IS/MND, no significant impacts would occur.

17. TRANSPORTATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?				X
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)? – NOT APPLICABLE				N/A
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?				X
d) Result in inadequate emergency access?				X

Environmental Setting

The Joshua Tree Community Plan area is located along the southern edge of San Bernardino between the United States Marine Corps Air Ground Combat Center and Joshua Tree National Park. Twentynine Palms Highway (SR-62) provides access from both the Yucca Valley to the west and Twentynine Palms to the east. Old Woman Springs Road (SR-247) is located in close proximity to the western boundary of the plan area and provides access to Lucerne Valley. The vast majority of travel trips in the plan area are made by automobile, using the existing network of state highways and County roads. The Joshua Tree Community Plan Area lacks appropriate pedestrian and bicycle improvements. Residents have expressed a desire to improve the pedestrian and bicycle circulation system within their community to appeal to both locals and visitors and to create a pedestrian friendly downtown (County of San Bernardino 2007b).

Impact Analysis

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

No Impact. The Proposed Project is the development of recreational pedestrian and bicycle trails along Sunburst Avenue in the community of Joshua Tree. The Proposed Project is consistent with the Joshua Tree Community Plan (County of San Bernardino 2007b). Specifically, the Proposed Project would be consistent with, but not limited to, the following goals and policies of the Joshua Tree Community Plan:

- **Goal JT/OS 1.** Develop parks, recreation facilities and a non-motorized trail system to meet the recreational needs of the community.

- **Goal JT/CI 2.4.** Where feasible, establish and coordinate a separate system of bikeway and pedestrian trails connecting residential areas, recreational facilities, activity centers, downtown Joshua Tree and the entrance to the National Park.

- **Goal JT/CI 2.6.** Provide bicycle lanes adjacent to Twentynine Palms Highway and throughout the planning area, with safe crossing areas.

- **Goal JT/CI 4.** Promote alternative modes of transportation.

The Proposed Project would result in beneficial impacts to the community of Joshua Tree.

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

Not Applicable. CEQA Guidelines section 15064.3, subdivision (b) details the use of vehicle miles traveled (VMT) to assess the significance of transportation impacts. As detailed in CEQA Guidelines section 15064.3, subdivision (c), a lead agency may elect to be governed by the provisions of this section immediately. Beginning on July 1, 2020, the provisions of this section shall apply statewide. As of the preparation of this document (May 2019), VMT analysis has not been adopted by the County of San Bernardino and this question does not apply to the Proposed Project.

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

No Impact. The final design of the Proposed Project would be completed in accordance with the guidance and requirements of the Caltrans Highway Design Manual, Chapter 1000, “Bikeway Planning and Design.” No impact would occur.

d) *Result in inadequate emergency access?*

No Impact. The Proposed Project has been designed to meet County development standards and would be located entirely within the ROW of Sunburst Avenue. Project plans would also be reviewed by the County’s fire and sheriff’s departments to ensure adequate emergency access is provided. No impact would occur.

Mitigation Measures

None.

Transportation Impact Conclusions

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

18. TRIBAL CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, lace, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:		X		
a) Listed or eligible for listing in California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or				X
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		X		

Regulatory Setting

Effective July 1, 2015, Assembly Bill 52 (AB 52) amended CEQA to require that: 1) a lead agency provide notice to those California Native American tribes that requested notice of projects proposed by the lead agency; and 2) for any tribe that responded to the notice within 30 days of receipt with a request for consultation, the lead agency must consult with the tribe. Topics that may be addressed during consultation include Tribal Cultural Resources (TCRs), the potential significance of project impacts, type of environmental document that should be prepared, and possible mitigation measures and project alternatives.

Pursuant to AB 52, Section 21073 of the Public Resources Code defines California Native American tribes as “a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of the Statutes of 2004.” This includes both federally and non-federally recognized tribes.
Section 21074(a) of the Public Resource Code defines TCRs for the purpose of CEQA as:

1. Sites, features, places, cultural landscapes (geographically defined in terms of the size and scope), sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

    a. included or determined to be eligible for inclusion in the California Register of Historical Resources; and/or

    b. included in a local register of historical resources as defined in subdivision (k) of Section 5020.1; and/or

    c. 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this

paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

Because criteria a and b also meet the definition of a historical resource under CEQA, a TCR may also require additional consideration as a historical resource. TCRs may or may not exhibit archaeological, cultural, or physical indicators.

Recognizing that California tribes are experts in their tribal cultural resources and heritage, AB 52 requires that CEQA lead agencies provide tribes that requested notification an opportunity to consult at the commencement of the CEQA process to identify TCRs. Furthermore, because a significant effect on a TCR is considered a significant impact on the environment under CEQA, consultation is used to develop appropriate avoidance, impact minimization, and mitigation measures.

Summary of AB 52 Consultation

On December 7, 2018, the County of San Bernardino initiated environmental review under CEQA for the Proposed Project. On December 7, 2018, the County of San Bernardino sent project notification letters to the following California Native American tribes, which had previously submitted general consultation request letters pursuant to 21080.3.1(d) of the Public Resources Code:

- San Manuel Band of Mission Indians
- Twentynine Palms Band of Mission Indians

Each recipient was provided a brief description of the Proposed 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 January 10, 2019.

As a result of the initial notification letters, the County of San Bernardino received the following responses:

- Twenty-Nine Palms Band of Mission Indians: December 13, 2018; Tribe requested copies of cultural resources report prior to concluding consultation.
- San Manuel Band of Mission Indians: January 10, 2019; Tribe requested copies of cultural resources report prior to concluding consultation.

The County acknowledged receipt of correspondence from the Tribes and indicated consultation under AB52 would be held open pending the Tribes' review of the cultural resources report when completed.

The completed cultural resources report was transmitted to the consulting tribes on June 17, 2019. On July 3, 2019, Twenty-Nine Palms Band of Mission Indians responded with a recommendation that a Cultural Sensitivity Training take place prior to ground disturbance. This measure has been added to the Tribal Mitigation Measures as TCR-5. Consultation closed with Twenty-Nine Palms Band of Mission Indians on July 11, 2019.

San Manuel Band of Mission Indians requested incidental finds measures be added to the Proposed Project. Specific measure language was agreed upon on July 15, 2019 (Mitigation Measures TCR-1 through TCR-4 below) and consultation was closed.

Impact Analysis

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)?

No Impact. A cultural resources records search was completed at the SCCIC at California State University, Fullerton in March 2019 (ECORP 2019d). No CRHR eligible resources were identified within the project site. As such, no impact would occur.

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?

Less Than Significant With Mitigation Incorporated.

No TCRs were identified within the project area during AB 52 consultation. The Proposed Project would not result in significant impacts to known TCRs. However, as a result of AB 52 consultation the Tribes identified a potential for the discovery of unknown TCRs during construction, which may result in a significant impact if such resources are found and affected. Impacts to unknown TCRs would be less than significant with the implementation of Mitigation Measures TCR-1 through TCR-5.

Mitigation Measures

TCR-1 Appropriate consulting Tribe(s) shall be contacted, as detailed in CUL-1, of any pre-contact cultural resources discovered during project implementation, and be provided information regarding the nature of the find, so as to provide Tribal input within 48 hours with regards to significance and treatment. Should the find be deemed significant, as defined by CEQA (as amended, 2018), a cultural resources Monitoring and Treatment Plan shall be created by the archaeologist, in coordination with consulting Tribe(s), and all subsequent finds shall be subject to this Plan. This Plan shall allow for a monitor to be present that represents consulting Tribe(s) for the remainder of the project, should Tribe(s) elect to place a monitor on-site at the Tribe's cost.

As necessary, and in accordance with Project-Specific consultations conducted with the NAHC and various Tribal entities in association with AB 52, SB 18, and/or any other legal guidelines relating to Native American consultations, the specific language noted in CUL-1 and CUL-2 may change to reflect Project-Specific needs and requirements.

TCR-2 If human remains or funerary objects are encountered during any activities associated with the project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to CUL-2 and State Health and Safety Code §7050.5 and that code shall be enforced for the duration of the project.

TCR-3 Only the NAHC Designated MLD Tribal representative shall make all future decisions regarding the treatment of human remains of Native American origin within the response times outlined below. The MLD shall determine the disposition and treatment of Native American human remains and any associated grave goods following Native American Graves Protection and Repatriation Act (NAGPRA) protocols, and what constitutes "appropriate dignity" as that term is used in the applicable statutes and in the Tribe's customs and traditions.

The MLD or his/her designee shall complete an inspection and provide written recommendations to the DPW and the landowner (if different than the DPW) within forty-eight (48) hours of being granted access to the site. If the descendant does not make recommendations within 48 hours, the landowner shall re-inter the remains in a secure area of the property where there will be no further disturbance. Should the landowner not accept the descendant's recommendations, either the owner or the MLD may request mediation by NAHC. According to the California Health and

Safety Code, six (6) or more human burials at one (1) location constitute a cemetery (Section 8100), and willful disturbance of human remains in a cemetery is a felony (Section 7052).

TCR-4 Any and all archaeological/cultural documents as related to documented tribal cultural resources created as a part of the project (isolate records, site records, survey reports, testing reports, etc.) shall be disseminated to appropriate consulting Tribe(s) in the form of an un-redacted report (containing DPR forms). The Lead Agency and/or applicant shall, in good faith, consult with the appropriate Tribe(s) until construction completion of the project and completion of any measures imposed to protect resources.

TCR-5 Prior to ground disturbing activities, Cultural Sensitivity Training shall be provided by approved Twenty-Nine Palms Band of Mission Indians approved Tribal Historic Preservation Office (THPO) staff. This training shall be provided to all workers involved in land disturbing activities. Please contact the THPO at (760) 775-3259 or by email at TNPConsultation@29palmsbomi-nsn.gov.

Tribal Cultural Resources Conclusions

With implementation of the above listed measures, less than significant impacts would occur.

19. UTILITIES AND SERVICE SYSTEMS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?				X
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?				X
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?				X
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?				X

Environmental Setting

In the County, provision and maintenance of infrastructure facilities and public services is coordinated through Special Districts and County Service Areas (CSAs). In the Joshua Tree community there are several CSAs that provide public services for streetlights, road, parks and recreation, fire protection. Water service in the project area is provided by the Joshua Basin Water District. Wastewater in Joshua Tree is primarily handled via on-site treatment (septic systems). Waste Management of the Desert hauls solid waste in the community of Joshua Tree. Solid waste is disposed of at Landers Sanitary Landfill.

Impact Analysis

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

No Impact. The Proposed Project does not include the construction or operation of facilities that would require a permanent water source, electric power, natural gas or telecommunication facilities. The Proposed Project would also not generate wastewater. As such no impact would occur.

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

No Impact. The Proposed Project does not include facilities that would require a water source. The proposed trails do not require irrigation nor a potable water resource. No impact would occur.

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?

No Impact. The Proposed Project does not include facilities that generate wastewater. As such, no impact would occur.

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?

No Impact. The Proposed Project would generate minor amounts of waste during construction, which would be disposed of at the Landers Sanitary Landfill. As of July 2016, Landers Sanitary Landfill has a remaining capacity of 11,148,100 cubic yards (CalRecycle 2019). Operation of the trail would be limited to transitory use by pedestrians/bicyclists for recreation. Operation of the Proposed Project would not generate solid waste; therefore, no new demand on the waste disposal capacity is expected to occur. No impact would occur.

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

No Impact. All solid waste generated during project construction would be disposed of by the contractor at an approved site. The contractor is required to comply with federal, State, and local statues and regulations regarding solid waste. No impact would occur.

Mitigation Measures

None.

Utilities and Service Systems Impact Conclusions

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

20. WILDFIRE

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

Environmental Setting

The project site is not located on land within a State Responsibility Area (SRA) (CAL FIRE 2019). The project area is identified as a *Moderate Fuel Rank/Fire Threat* by the County of San Bernardino Safety Background Report (County of San Bernardino 2005). The project site is generally located within an area characterized by rural residential development interspersed with undeveloped properties and a few commercial and institutional land uses (Sportsman's Park, Joshua Tree Park & Recreation District). Within the boundaries of the project site there are disturbed areas that contain little to no vegetation.

Impact Analysis

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. The Proposed Project is a pedestrian/bicycle trail. The proposed improvements would be located along the existing ROW of Sunburst Avenue. The developed trail would not conflict with access and/or circulation of emergency vehicles in response to an emergency and/or evacuation. No impact is anticipated.

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?

Less Than Significant. The project site is not located on land within a SRA (CAL FIRE 2019). The project area is identified as a *Moderate Fuel Rank/Fire Threat* by the County of San Bernardino Safety Background Report (County of San Bernardino 2005). As previously mentioned, the Proposed Project would be located within the ROW of Sunburst Avenue in the community of Joshua Tree. The Proposed Project is located in an area characterized by mostly residential development with commercial and public uses. Because of the existing

developed nature of the project area it is not anticipated that the Proposed Project would increase the risk related to wildland fires. Impacts would be less than significant.

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?*

No Impact. As previously stated, the project site is not located in or near a SRA. The Proposed Project would develop pedestrian/bicycle trails along Sunburst Avenue. All improvements are located within the ROW of Sunburst Avenue. The Proposed Project would not require the installation or maintenance of infrastructure that would exacerbate fire risk resulting in temporary or ongoing impacts to the environment. No impact would occur.

d) *Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?*

No Impact. The topography of the project site is relatively flat; however, a small mountain range (Bartlett Mountains) is located just west of the central portion of the project site. The Proposed Project would not require substantial grading. Due to the relatively flat characteristics of the project site, no impacts are anticipated due to downslope or downstream flooding or landslides.

Mitigation Measures

None.

Wildfire Impact Conclusions

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

21. MANDATORY FINDINGS OF SIGNIFICANCE

	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?		X		
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?		X		
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		X		

a) 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?

Less Than Significant With Mitigation. Impacts to biological and cultural resources are discussed in the respective sections of this Initial Study. Impacts would be less than significant with Mitigation Measures BIO-1 through BIO-3, CUL-1 and CUL-2, and TCR-1 through TCR-5.

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)?

Less Than Significant With Mitigation. Impacts from the Proposed Project would not be cumulatively considerable with the implementation of the mitigation measures listed in this Initial Study.

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

Less Than Significant With Mitigation. Direct and indirect impacts to human beings would be less than significant with the implementation of mitigation measures listed in this Initial Study.

SECTION 5 – SUMMARY OF MITIGATION MEASURES

The following mitigation measures were identified to reduce impacts to less than significant:

BIOLOGICAL RESOURCES:

BIO-1 Pre-construction Survey for Burrowing Owl: A pre-construction survey for burrowing owl shall be conducted within project site and adjacent areas prior to the start of construction. The survey shall follow the methods described in the CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). The pre-construction burrowing owl survey shall be conducted between 30 and 14 days prior to initial ground disturbance (grading, grubbing, and construction). If burrowing owls or their sign (e.g., burrows with whitewash, pellets, bones of prey items) are identified during the pre-construction survey, then a second pre-construction survey will be conducted no more than 24 hours prior to initial ground disturbance. If burrowing owls and/or suitable burrowing owl burrows with sign (e.g., whitewash, pellets, feathers, prey remains) are identified on the project site during the survey(s) and impacts to those features are unavoidable, consultation with the CDFW shall be conducted and the methods described in the CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFW 2012) for avoidance and/or passive relocation shall be followed.

BIO-2 Pre-construction Survey for Desert Tortoise: A pre-construction survey for desert tortoise shall be conducted prior to the start of ground-disturbing activities in accordance with the protocol methods outlined in *Preparing for Any Action that May Occur within the Range of the Mojave Desert Tortoise* (USFWS 2018). If desert tortoises or desert tortoise sign (e.g., burrows, carcasses, scat) are observed on or immediately adjacent to the project site, then coordination with USFWS and CDFW will need to occur and avoidance or minimization measures, such as biological monitoring and no disturbance buffers around burrows, may need to be implemented. If project-related impacts to the desert tortoise are found to be unavoidable and significant following the pre-construction survey, then the necessary state and federal permits will need to be obtained from CDFW and USFWS prior to the start of project activities.

BIO-3 Pre-construction Nesting Bird Survey: If construction or other project activities are scheduled to occur during the bird breeding season (typically February 1 through August 31 for raptors and March 15 through August 31 for the majority of migratory bird species), a pre-construction nesting bird survey shall be conducted by a qualified avian biologist to ensure that active bird nests, including those for the Le Conte's thrasher, will not be disturbed or destroyed. The survey shall be completed no more than three days prior to initial ground disturbance and may be combined with the second burrowing owl survey identified in Mitigation Measure BIO-1 if a second pre-construction burrowing owl survey is conducted on site. The nesting bird survey shall include the project site and adjacent areas where project activities have the potential to affect active nests, either directly or indirectly due to construction activity or noise. If an active nest is identified, the biologist shall establish an appropriately-sized disturbance limit buffer around the nest using flagging or staking. Construction activities shall not occur within any disturbance limit buffer zones until the nest is deemed inactive by the qualified biologist.

CULTURAL RESOURCES:

CUL-1 Should unanticipated or inadvertent surface and/or subsurface prehistoric or historic archaeological resources, built environment, and/or tribal cultural resources, appear to be encountered during construction or maintenance activity associated with this project, then all work must halt within a 100-

foot radius of the discovery until a qualified professional can evaluate the discovery. If the finds are archaeological or historic in nature, then an archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and/or historic archaeology have evaluated the significance of the find. This archaeologist shall have the authority to modify the no-work radius as appropriate, using professional judgment. The following shall apply, depending on the nature of the find:

A. If the professional archaeologist determines that the find *does not* represent a cultural resource, then work may resume immediately and no agency notifications are required.

B. If the professional archaeologist determines that the find *does* represent a cultural resource from any time or cultural affiliation then, depending on the nature of the discovery, appropriate treatment measures shall be developed.

C. If the find represents a Native American or potentially Native American resource that does not include human remains, which may or may not include a Tribal Cultural Resource, then the archaeologist shall consult with appropriate Tribe[s] on whether or not the resource represents either a Tribal Cultural Resource or a Historical Resource, or both, and, if so, consult on appropriate treatment measures. Preservation in place is the preferred treatment, if feasible. Work cannot resume within the no-work radius until the County, through consultation as appropriate, determines that the site either: 1) is not a Tribal Cultural Resource or Historical Resource; or 2) that the treatment measures for the Tribal Cultural Resource or Historical Resource have been completed.

CUL-2 If the find during construction or maintenance activity includes human remains, or remains that are potentially human, the archaeologist shall ensure reasonable protection measures are taken to protect the discovery from disturbance (AB 2641). The archaeologist shall notify the San Bernardino County Coroner (per §7050.5 of the Health and Safety Code). The Coroner's Office may be contacted at Coroner's Division, County of San Bernardino, 175 South Lena Road, San Bernardino, California 92415 or by calling 909.387.2978. The provisions of §7050.5 of the California Health and Safety Code, §5097.98 of the California Public Resources Code, and Assembly Bill 2641 will be implemented. If the Coroner determines the remains are Native American, the Coroner will notify the NAHC by telephone within 24 hours. The NAHC will then immediately notify the person it believes to be the Most Likely Descendant (MLD) of the remains (§5097.98 of the Public Resources Code). The designated MLD will have 48 hours, from the time access to the property is granted, to make recommendations concerning treatment of the remains, in accordance with California Health and Safety Code §7050.5 and CEQA Guidelines §15064.5(e). If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (§5097.94 of the Public Resources Code). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (§5097.98 of the Public Resources Code). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the county in which the property is located (AB 2641). Work may not resume within the no-work radius until the County, through consultation as appropriate, determines that the treatment measures have been completed to its satisfaction.

If the Coroner determines that the remains are not of Native American origin and that the remains are from the historic-era, the County Coroner will make a recommendation as to the disposition of the

remains. Construction may continue once compliance with all relevant sections of the California Health and Safety Code has been addressed and an authorization to proceed is issued by the County Coroner.

GEOLOGY AND SOILS:

GEO-1 If project excavations exceed three feet in depth in sediments mapped as Quaternary alluvium (Qoa) then a Paleontological Resource Impact Management Plan shall be prepared by a qualified paleontologist. This plan shall adhere to the guidelines of the Society of Vertebrate Paleontology and shall include monitoring and sampling of sediments to test for microvertebrate fossils.

TRIBAL CULTURAL RESOURCES:

TCR-1 Appropriate consulting Tribe(s) shall be contacted, as detailed in CUL-1, of any pre-contact cultural resources discovered during project implementation, and be provided information regarding the nature of the find, so as to provide Tribal input within 48 hours with regards to significance and treatment. Should the find be deemed significant, as defined by CEQA (as amended, 2018), a cultural resources Monitoring and Treatment Plan shall be created by the archaeologist, in coordination with consulting Tribe(s), and all subsequent finds shall be subject to this Plan. This Plan shall allow for a monitor to be present that represents consulting Tribe(s) for the remainder of the project, should Tribe(s) elect to place a monitor on-site at the Tribe's cost.

As necessary, and in accordance with Project-Specific consultations conducted with the NAHC and various Tribal entities in association with AB 52, SB 18, and/or any other legal guidelines relating to Native American consultations, the specific language noted in CUL-1 and CUL-2 may change to reflect Project-Specific needs and requirements.

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TCR-3 Only the NAHC Designated MLD Tribal representative shall make all future decisions regarding the treatment of human remains of Native American origin within the response times outlined below. The MLD shall determine the disposition and treatment of Native American human remains and any associated grave goods following Native American Graves Protection and Repatriation Act (NAGPRA) protocols, and what constitutes "appropriate dignity" as that term is used in the applicable statutes and in the Tribe's customs and traditions.

The MLD or his/her designee shall complete an inspection and provide written recommendations to the DPW and the landowner (if different than the DPW) within forty-eight (48) hours of being granted access to the site. If the descendant does not make recommendations within 48 hours, the landowner shall re-inter the remains in a secure area of the property where there will be no further disturbance. Should the landowner not accept the descendant's recommendations, either the owner or the MLD may request mediation by NAHC. According to the California Health and Safety Code, six (6) or more human burials at one (1) location constitute a cemetery (Section 8100), and willful disturbance of human remains in a cemetery is a felony (Section 7052).

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disseminated to appropriate consulting Tribe(s) in the form of an un-redacted report (containing DPR forms). The Lead Agency and/or applicant shall, in good faith, consult with the appropriate Tribe(s) until construction completion of the project and completion of any measures imposed to protect resources.

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SECTION 6 - REFERENCES

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2019d Cultural Resources Inventory and Evaluation Sunburst Avenue Bike Trail Project in the Community of Joshua Tree San Bernardino County, California. June.

2019e Noise Impact Assessment for the Sunburst Avenue Bike Trail Project. June.

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SECTION 7 – APPENDICES

Appendix A – Air Quality and Greenhouse Gas Assessment

Appendix B – Biological Technical Report

Appendix C – Aquatic Resources Delineation

Appendix D – Cultural Resources Inventory and Evaluation

Appendix E – Noise Impact Assessment

Appendix F – Site Plan

Appendix A – Air Quality and Greenhouse Gas Assessment

Sunburst Avenue Bike Trial Project

Air Quality and Greenhouse Gas Assessment

San Bernardino County, California

Prepared For:

COUNTY OF SAN NERNARDINO
DEPARTMENT OF PUBLIC WORKS
825 E. THIRD STREET
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June 2019

ECORP Consulting, Inc.
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ATTACHMENTS

Attachment A – CalEEMod Output File

1.0 INTRODUCTION

This report documents the results of an assessment of both air quality and greenhouse gas emissions (GHG) completed for the Sunburst Avenue Bike Trail Project (Project). This includes the design and rehabilitation of an existing Class I bike path along with the design and construction of two new Class II bike lanes spanning two miles, from the intersection of Sunburst Avenue and State Route 62, in the unincorporated community of Joshua Tree, San Bernardino County (County). This assessment was prepared using methodologies and assumptions recommended in the rules and regulations of the Mojave Desert Air Quality Management District (MDAQMD). Regional and local existing conditions are presented, along with pertinent emissions standards and regulations. The purpose of this assessment is to estimate Project-generated criteria air pollutants and GHG emissions attributable to the Project and to determine the level of impact the Project would have on the environment.

1.1 Project Description and Location

The Project Site is located in the unincorporated community of Joshua Tree, located in southern San Bernardino County. The County proposes rehabilitation and construction of approximately 2 miles of bike lanes and paths spanning Sunburst Avenue from the intersection of Calle Los Amigos to State Route 62 (SR 62), for the purpose of accommodating an identified need for a non-vehicle trail to serve local residents in the community. Specifically, the Proposed Project would include the rehabilitation of the existing Class I bike path located along the east side of Sunburst Avenue from SR 62 north to Oleander Avenue, construction a new Class II bike lane on the east side of Sunburst Avenue from Oleander Avenue north to Calle Los Amigos, and constructing a new Class II bike lane on the west side of Sunburst Avenue from SR 62 north to Calle Los Amigos. The rehabilitation of the existing Class I bike path on the east side of Sunburst Avenue would include a 6.5-foot shoulder between Sunburst Avenue and the bike path, an 8-foot paved concrete bike path, and a two-foot shoulder along the eastern edge of the bike path. The new Class II bike lanes would be approximately four to five feet wide with two-foot shoulders on each side.

In general, construction activities associated with development of the trail would include excavation and grading; installation of signage; and painting of pavement striping and pavement markings.

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2.0 AIR QUALITY

2.1 Air Quality Setting

Air quality in a region is determined by its topography, meteorology, and existing air pollutant sources. These factors are discussed below, along with the current regulatory structure that applies to the Mojave Desert Air Basin (MDAB), which encompasses the Project site, pursuant to the regulatory authority of the MDAQMD.

Ambient air quality is commonly characterized by climate conditions, the meteorological influences on air quality, and the quantity and type of pollutants released. The air basin is subject to a combination of topographical and climatic factors that reduce the potential for high levels of regional and local air pollutants. The following section describes the pertinent characteristics of the air basin and provides an overview of the physical conditions affecting pollutant dispersion in the Project area.

Mojave Desert Air Basin

The MDAB is comprised of four air districts, the Kern County APCD, the Antelope Valley AQMD, the Mojave Desert AQMD, and the eastern portion of the South Coast AQMD. The Kern County APCD consists of the eastern portion of Kern County; the Antelope Valley AQMD consists of the northeastern portion of Los Angeles County; the Mojave Desert AQMD includes San Bernardino County and the most eastern portion of Riverside County; and the portion of the South Coast AQMD includes the eastern part of Riverside County.

Temperature and Climate

The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains which dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada mountains to the north; air masses pushed onshore in southern California by differential heating are channeled through the MDAB. The MDAB is separated from the southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses. The Antelope Valley portion of the Mojave Desert is bordered in the northwest by the Tehachapi Mountains, separated from the Sierra Nevadas in the north by the Tehachapi Pass (3,800 feet elevation). The Antelope Valley is bordered in the south by the San Gabriel Mountains, bisected by Soledad Canyon (3,300 feet). The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, separated from the San Gabriels by the Cajon Pass (4,200 feet). A lesser channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains (the Morongo Valley). The Palo Verde Valley portion of the Mojave Desert lies in the low desert, at the eastern end of a series of valleys (notably the Coachella Valley) whose primary channel is the San Gorgonio Pass (2,300 feet) between the San Bernardino and San Jacinto Mountains.

During the summer, the MDAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse

by the time the reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. The MDAB averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inches of precipitation). The MDAB is classified as a dry-hot desert climate (BWh), with portions classified as dry-very hot desert (BWhh), to indicate at least three months have maximum average temperatures over 100.4° F.

Criteria Air Pollutants

Criteria air pollutants are defined as those pollutants for which the federal and state governments have established air quality standards for outdoor or ambient concentrations to protect public health with a determined margin of safety. Ozone (O_3), course particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$) are generally considered to be regional pollutants because they or their precursors affect air quality on a regional scale. Pollutants such as carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) are considered to be local pollutants because they tend to accumulate in the air locally. PM is also considered a local pollutant. Health effects commonly associated with criteria pollutants are summarized in **Table 2-1**.

Table 2-1. Criteria Air Pollutants- Summary of Common Sources and Effects

Pollutant	Major Man-Made Sources	Human Health & Welfare Effects
CO	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, effecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
NO_2	A reddish-brown gas formed during fuel combustion for motor vehicles, energy utilities and industrial sources.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Causes brown discoloration of the atmosphere.
O_3	Formed by a chemical reaction between reactive organic gases (ROGs) and nitrous oxides (NOx) in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, solvents, paints and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield.
PM_{10} & $PM_{2.5}$	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
SO_2	A colorless, nonflammable gas formed when fuel containing sulfur is burned. Examples are refineries, cement manufacturing, and locomotives.	Respiratory irritant. Aggravates lung and heart problems. Can damage crops and natural vegetation. Impairs visibility.

Source: CAPCOA 2013

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage, and death.

According to the California Air Resources Board's (CARB) *California Almanac of Emissions and Air Quality* (2013), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being PM from diesel-fueled engines (diesel PM). Diesel PM has been identified as a human carcinogen and contains hundreds of different gaseous and particulate components, many of which are toxic. Diesel particles are so small that they penetrate deep into the lungs. Studies show that diesel PM concentrations are much higher near heavily traveled highways and intersections. Off-road construction equipment and heavy-duty trucks are considered major sources of diesel-related emissions.

Ambient Air Quality

Ambient air quality at the Project site can be inferred from ambient air quality measurements conducted at nearby air quality monitoring stations. CARB maintains over 60 monitoring stations throughout California. The Joshua Tree National Monument air quality monitoring station, located approximately 7 miles northwest of the Project site, monitors ambient concentrations of O_3; the Victorville- Park Avenue air quality monitoring station, located approximately 62 miles northwest of the Project site, monitors ambient concentrations of $PM_{2.5}$; and the Lucerne Valley- Middle School air quality monitoring station, located approximately 38 miles northwest of the Project site, monitors ambient concentrations of PM_{10}. Ambient emission concentrations will vary due to localized variations in emission sources and climate and should be considered "generally" representative of ambient concentrations in the development area.

Table 2-2 summarizes the published data concerning O_3, $PM_{2.5}$, PM_{10} since 2015 from the monitoring stations for each year that the monitoring data is provided.

Table 2-2. Summary of Ambient Air Quality Data			
Pollutant Standards	2015	2016	2017
O_3			
Max 1-hour concentration (ppm)	0.104	0.107	0.117
Max 8-hour concentration (ppm) (state/federal)	0.092 / 0.091	0.088 / 0.088	0.098 / 0.098
Number of days above state 1-hour standard	5 / 0	4 / 0	15 / 0
Number of days above 8-hour standard (state/federal)	46 / 38	40 / 38	56 / 52
PM_{10}			
Max 24-hour concentration (µg/m3) (state/federal)	16.6 / 79.5	* / 199.6	* / 135.7
Number of days above 24-hour standard (state/federal)	* / 0	* / 1.1	* / 0
$PM_{2.5}$			
Max 24-hour concentration (µg/m3) (state/federal)	50.2 / 50.2	41.5 / 41.5	29.3 / 50.2
Number of days above federal 24-hour standard	*	1	0

Source: CARB 2018
µg/m^3 = micrograms per cubic meter; ppm = parts per million
** = Insufficient data available*

The U.S. Environment Protection Agency (USEPA) and CARB designate air basins or portions of air basins and counties as being in "attainment" or "nonattainment" for each of the criteria pollutants. Areas that do not meet the standards are classified as nonattainment areas. The National Ambient Air Quality Standards (NAAQS) (other than O_3, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. The NAAQS for O_3, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over one- to three-year periods, depending on the pollutant. The California Ambient Air Quality Standards (CAAQS) are not to be exceeded during a three-year period. The attainment status for the for the San Bernardino portion of the MDAB is included in **Table 2-3.**

The determination of whether an area meets the state and federal standards is based on air quality monitoring data. Some areas are unclassified, which means there is insufficient monitoring data for determining attainment or nonattainment. Unclassified areas are typically treated as being in attainment. Because the attainment/nonattainment designation is pollutant specific, an area may be classified as nonattainment for one pollutant and attainment for another. Similarly, because the state and federal standards differ, an area could be classified as attainment for the federal standards of a pollutant and as nonattainment for the state standards of the same pollutant. The region is designated as a nonattainment area for the federal O_3 and PM_{10} standards and is also a nonattainment area for the state standards for O_3, PM_{10}, and $PM_{2.5}$ standards (CARB 2017a).

Table 2-3. Attainment Status of Criteria Pollutants in the San Bernardino County Portion of Mojave Desert Air Basin		
Pollutant	State Designation	Federal Designation
O_3	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Nonattainment
$PM_{2.5}$	Nonattainment	Unclassified/Attainment
CO	Attainment	Unclassified/Attainment
NO_2	Attainment	Unclassified/Attainment
SO_2	Attainment	Unclassified/Attainment

Source: CARB 2017a

2.2 Regulatory Framework

Federal

Clean Air Act

The Clean Air Act (CAA) of 1970 and the CAA Amendments of 1971 required the US Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS), with states retaining the option to adopt more stringent standards or to include other specific pollutants. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those "sensitive receptors" most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

The EPA has classified air basins (or portions thereof) as being in attainment, nonattainment, or unclassified for each criteria air pollutant, based on whether or not the NAAQS have been achieved. If an area is designated unclassified, it is because inadequate air quality data were available as a basis for a nonattainment or attainment designation. **Table 2-3** lists the federal attainment status of the MDAB for the criteria pollutants.

State

California Clean Air Act

The California Clean Air Act (CCAA) allows states to adopt ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. CARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the California ambient air quality standards. CARB also conducts research, compiles emission inventories, develops suggested

control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB also has primary responsibility for the development of California's State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts.

California State Implementation Plan

The federal Clean Air Act (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the SIP. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The CAA Amendments dictate that states containing areas violating the national ambient air quality standards revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the Clean Air Act. The EPA has the responsibility to review all State Implementation Plans to determine if they conform to the requirements of the CAA.

State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB then forwards SIP revisions to the EPA for approval and publication in the Federal Register. The MDAQMD is the agency primarily responsible for ensuring that national and state ambient air quality standards are not exceeded and that air quality conditions are maintained in the air basin. MDAQMD responsibilities include, but are not limited to, preparing plans for the attainment of ambient air quality standards, adopting and enforcing rules and regulations concerning sources of air pollution, and implementing programs and regulations required by the federal Clean Air Act and the California Clean Air Act. In an attempt to achieve NAAQS and CAAQS and maintain air quality, the air district has completed the following air quality attainment plans and reports:

- Searles Valley PM_{10} Attainment Plan
- Searles Valley PM_{10} Attainment Demonstration & Maintenance Plan
- Mojave Desert Planning Area PM_{10} Attainment Plan
- MDAQMD Ozone Attainment Plan 2004 (State & Federal)
- MDAQMD Reasonable Further Progress/Rate-of-Progress Plan
- MDAQMD Post 1996 Attainment Demonstration and Reasonable Further Progress Plan
- MDAQMD Schedule for District Measures to Reduce PM Pursuant to H&S Code 39614(d)

- MDAQMD 2006 8-Hour Ozone Reasonably Available Control Technology – State Implementation Plan Analysis
- MDAQMD 2014 Supplement to the 2006 8-Hour Ozone Reasonably Available Control Technology – State Implementation Plan Analysis
- MDAQMD 8-Hour Ozone Federal Negative Declarations for 44 Source Categories
- MDAQMD Smoke Management Program
- MDAQMD Ozone Attainment Plan 2008 (Western Mojave Desert Non-Attainment Area)
- MDAQMD 2015 8-Hour Reasonably Available Control Technology – State Implementation Plan Analysis
- MDAQMD 2015 Federal Negative Declaration (8-Hour Ozone Standard) for Nineteen Control Technique Guideline Categories

Local

Mojave Desert Air Quality Management District

As previously described, the MDAQMD is the agency primarily responsible for ensuring that federal and state ambient air quality standards are not exceeded and that air quality conditions are maintained. Responsibilities of the MDAQMD include, but are not limited to, adopting and enforcing rules and regulations concerning sources of air pollution, issuing permits for stationary sources of air pollution, monitoring ambient air quality and meteorological conditions, and implementing programs and regulations required by the federal Clean Air Act and Clean Air Act Amendments. Provisions applicable to the Proposed Project are summarized as follows:

- **Rule 201 – Permits to Construct** applies to the construction of air emissions sources that are not otherwise exempt under Rule 219.
- **Rule 203 – Permit to Operate** requires air emissions sources that are not exempted by Rule 219 to obtain operating permit.
- **Rule 204 – Requirements** contains rule language describing New Source Review including Best Available Control Technology (BACT) and emissions offset requirements for stationary sources.
- **Rule 219 – Equipment Not Requiring a Permit** describes the type of equipment that does not require a permit pursuant to District Rules 201 and 203.
- **Rule 401 – Visible Emissions** limits visibility of fugitive dust to less than No. 1 on the Ringlemann Chart (i.e., 20 percent opacity).
- **Rule 402 – Nuisance** applies when complaints from the public are received by the district.

- **Rule 403 – Fugitive Dust** prohibits visible dust beyond the property line of the emission source, requires "every reasonable precaution" to minimize fugitive dust emissions and prevent trackout of materials onto public roadways, and prohibits greater than 100 µg/m3 difference between upwind and downwind particulate concentrations.
- **Rule 404 – Particulate Matter Concentration** sets concentration limits based on the flow rate of the discharge. The concentration limits would apply to discharge from a stack (e.g., baghouse).
- **Rule 405 – Solid Particulate Matter Weight** limits emissions based on the weight of material processed.
- **Rule 900 – New Source Performance Standards** incorporates federal regulation (40 CFR 60) that affects the construction of emissions units. Requirements may or may not apply depending on the size, construction, and manufacture date of equipment that will be used. Specifically, NSPS OOO (40 CFR 60.670) applies to equipment in nonmetallic mineral processing plants.
- **Regulation XIII – New Source Review** contains a number of rules that are applied to new and modified sources.
- **Rule 1520 – Control of Toxic Air Contaminants from Existing Sources** implements AB 2588 Air Toxics Hot Spots requirements.
- **Rule 2002 – General Federal Actions Conformity** requires federal actions to conform to the applicable implementation plan.

2.3 Air Quality Emissions Impact Assessment

Thresholds of Significance

The impact analysis provided below is based on the following California Environmental Quality Act (CEQA) Guidelines Appendix G thresholds of significance. The Project would result in a significant impact to air quality if it would:

1) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

2) Conflict with or obstruct implementation of any applicable air quality plan.

3) Expose sensitive receptors to substantial pollutant concentrations.

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

Methodology

Air quality impacts were assessed in accordance with methodologies recommended by CARB and the MDAQMD. Where criteria air pollutant quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod), version 2016.3.2. CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. Project construction-generated air pollutant emissions were calculated using CalEEMod model defaults for San Bernardino County as well as the detailed Project specifications provided by the Project proponent and contained in the Initial Study completed for the Project, such as the length of construction activities and types of equipment.

Impact Analysis

PROJECT CONSTRUCTION-GENERATED CRITERIA AIR QUALITY EMISSIONS

Regional Construction Significance Analysis

Construction-generated emissions are temporary and short term but have the potential to represent a significant air quality impact. Three basic sources of short-term emissions will be generated through construction of the Proposed Project: operation of the construction vehicles (i.e., excavators, trenchers, dump trucks), the creation of fugitive dust during clearing and grading, and construction worker commutes. Construction activities such as excavation and grading operations, construction vehicle traffic, and wind blowing over exposed soils would generate exhaust emissions and fugitive particulate matter emissions that affect local air quality at various times during construction. Effects would be variable depending on the weather, soil conditions, the amount of activity taking place, and the nature of dust control efforts.

Construction-generated emissions associated the Proposed Project were calculated using the CARB-approved CalEEMod computer program, which is designed to model emissions for land use development projects, based on typical construction requirements. See **Attachment A** for more information regarding the construction assumptions, including construction equipment and duration, used in this analysis.

Predicted maximum daily construction-generated emissions for the Proposed Project are summarized in **Table 2-4**. Construction-generated emissions are short term and of temporary duration, lasting only as long as construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the MDAQMD's thresholds of significance.

Table 2-4. Construction-Related Emissions (Regional Significance Analysis)						
Construction Year	Maximum Pollutants (pounds per day)					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Annual (Maximum Tons per Year)						
Construction - 2020	0.64	6.51	4.68	0.00	0.41	0.32
MDAQMD Annual Significance Threshold	*25*	*25*	*100*	*25*	*15*	*12*
Exceed MDAQMD Annual Threshold?	No	No	No	No	No	No
Daily (Maximum Pounds per Day)						
Construction - 2020	11.57	112.26	85.54	0.17	7.84	5.31
MDAQMD Daily Significance Threshold	*137*	*137*	*548*	*137*	*82*	*65*
Exceed MDAQMD Daily Threshold?	No	No	No	No	No	No

*Source: CalEEMod version 2016.3.2. Refer to **Attachment A** for Model Data Outputs.*
Notes: Emission estimates account for the grading of 84,480 square feet as well as the removal of 1,016 tons of debris.

As shown in **Table 2-4**, emissions generated during construction would not exceed the MDAQMD's annual or daily regional thresholds of significance. This would be considered a less than significant impact.

PROJECT OPERATIONS CRITERIA AIR QUALITY EMISSIONS

Regional Operational Significance Analysis

The Proposed Project involves the construction of an approximately 2 miles of bike paths and lanes. The Proposed Project will not include the provision of new permanent stationary or mobile sources of emissions, and therefore, by its very nature, will not generate quantifiable air quality emissions from Project operations. The Project does not propose any buildings and therefore no permanent source or stationary source emissions. Furthermore, the Project could be expected to reduce traffic trips in the area due to its ability meet the identified need for a non-vehicular trail to service local residents in the community. This potential reduction of automobile trips attributable to the Project would reduce the amount of daily criteria air pollutants currently being generated. Thus, there would be no operational impact related to air quality.

CONFLICT WITH MDAQMD AIR QUALITY ATTAINMENT PLANS

As part of its enforcement responsibilities, the EPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal

standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under state law, the California Clean Air Act requires an air quality attainment plan to be prepared for areas designated as nonattainment with regard to the federal and state ambient air quality standards. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

As previously mentioned, the Project site is located within the MDAB, which is under the jurisdiction of the MDAQMD. The MDAQMD is required, pursuant to the federal Clean Air Act, to reduce emissions of criteria pollutants for which the air basin is in nonattainment. In order to reduce such emissions, the MDAQMD adopts and enforces rules and regulations concerning sources of air pollution, issues permits for stationary sources of air pollution, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the federal Clean Air Act and Clean Air Act Amendments. The MDAQMD also assists CARB in preparing the SIP by preparing Attainment Plans that demonstrate how the ambient air quality standards will be achieved. The Attainment Plans describe the rules, policies, and other means by which the MDAQMD manages the emissions within its jurisdiction.

A project is conforming with the MDAQMD Attainment Plans if it complies with all applicable district rules and regulations, complies with all control measures from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan). A project is nonconforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. Conformity with growth forecasts can be established by demonstrating that the Project is consistent with the land use plan that was used to generate the growth forecast. An example of a nonconforming project would be one that increases the gross number of dwelling units, increases the number of trips, and/or increases the overall vehicle miles traveled in an affected area (relative to the applicable land use plan).

The Proposed Project would comply with all applicable district rules and regulations, including MDAQMD Rule 403 (Fugitive Dust) described above, and would comply with all proposed control measures from the applicable plans. As demonstrated above, the Proposed Project would not surpass any of the MDAQMD's significance thresholds for individual pollutants. Additionally, the Proposed Project would not be impacting the growth forecast used to inform MDAQMD air quality planning. Since the Project would not generate a significant amount of air pollutants and would not exceed the population or job growth projections used to develop MDAQMD's Attainment Plans, it would not result in a conflict.

EXPOSURE OF SENSITIVE RECEPTORS TO TOXIC AIR CONTAMINANTS

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

Construction-Generated Air Contaminants

Construction-related activities would result in temporary, short-term Project-generated emissions of diesel particulate matter (DPM) from the exhaust of off-road, heavy-duty diesel equipment for site preparation (e.g., clearing, grading); soil hauling truck traffic; paving; and other miscellaneous activities. For construction activity, DPM is the primary TAC of concern. Particulate exhaust emissions from diesel-fueled engines (i.e., DPM) were identified as a TAC by the CARB in 1998. The potential cancer risk from the inhalation of DPM, as discussed below, outweighs the potential for all other health impacts (i.e., non-cancer chronic risk, short-term acute risk) and health impacts from other TACs. Accordingly, DPM is the focus of this discussion.

Based on the emission modeling conducted the maximum construction-related emissions of exhaust $PM_{2.5}$, considered a surrogate for DPM, would be 4.67 pounds per day (see **Attachment A**) during construction activity ($PM_{2.5}$ is considered a surrogate for DPM because more than 90 percent of DPM is less than 1 microgram in diameter and therefore is a subset of particulate matter under 2.5 microns in diameter (i.e., $PM_{2.5}$), according to CARB. Most $PM_{2.5}$ derives from combustion, such as use of gasoline and diesel fuels by motor vehicles.) Furthermore, even during the most intense month of construction, emissions of DPM would be generated from different locations on the Project site, rather than a single location, because different types of construction activities (e.g., site preparation, grading, paving) would not occur at the same place at the same time and also due to the long length of the construction area.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for any exposed receptor. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-, 30-, or 9-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the Proposed Project. Consequently, an important consideration is the fact that construction of the Proposed Project is not anticipated to last 9 consecutive years, the minimum duration of exposure from which to calculate health risk (Project construction is anticipated to last approximately 6 months), and that on a day-to-day basis construction activity generally spans eight hours as opposed to throughout the entire day. Therefore, considering the relatively low mass of DPM emissions that would be generated during even the most intense season of construction and the relatively short duration of construction activities required to develop the site, construction-related TAC emissions would not expose sensitive receptors to substantial amounts of air toxics.

Operational Air Contaminants

The Proposed Project involves the construction of approximately 2 miles of bike paths and lanes. The Proposed Project will not include the provision of new permanent stationary or mobile sources of emissions, and therefore, by its very nature, will not generate quantifiable air toxic emissions from Project operations.

Carbon Monoxide Hot Spots

It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when idling at intersections. Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Under certain meteorological conditions, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Given the high traffic volume potential, areas of high CO concentrations, or "hot spots," are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours. However, transport of this criteria pollutant is extremely limited, and CO disperses rapidly with distance from the source under normal meteorological conditions. Furthermore, vehicle emissions standards have become increasingly more stringent in the last 20 years. Currently, the CO standard in California is a maximum of 3.4 grams per mile for passenger cars (requirements for certain vehicles are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations in the Project vicinity have steadily declined.
Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard. The analysis prepared for CO attainment in the SCAQMD *1992 Federal Attainment Plan for Carbon Monoxide* (1992 CO Plan) in Los Angeles County can be used to demonstrate the potential for CO exceedances. The SCAQMD CO hot spot analysis was conducted for four busy intersections in Los Angeles County during the peak morning and afternoon time periods. The intersections evaluated included Long Beach Boulevard and Imperial Highway (Lynwood), Wilshire Boulevard and Veteran Avenue (Westwood), Sunset Boulevard and Highland Avenue (Hollywood), and La Cienega Boulevard and Century Boulevard (Inglewood). The busiest intersection evaluated was at Wilshire Boulevard and Veteran Avenue, which has a traffic volume of approximately 100,000 vehicles per day. The Los Angeles County Metropolitan Transportation Authority evaluated the level of service in the vicinity of the Wilshire Boulevard/Veteran Avenue intersection and found it to be level of service (LOS) E at peak morning traffic and LOS F at peak afternoon traffic (LOS E and F are the two least efficient traffic LOS ratings). Even with the inefficient LOS and volume of traffic, the CO analysis concluded that there was no violation of CO standards (SCAQMD 1992).

The Project would not increase traffic volumes at any intersection, there is no likelihood of the Project traffic exceeding CO values.

ODORS

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same

odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Construction

During construction, the Proposed Project presents the potential for generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site. However, these emissions are short-term in nature and will rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Additionally, odors would be localized and generally confined to the construction area. Therefore, under CEQA, construction odors would result in a less than significant impact related to odor emissions.

Operations

The California Air Resources Board's (CARB's) *Air Quality and Land Use Handbook* (2005) identifies the sources of the most common operational odor complaints received by local air districts. Typical sources include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. The Project does not contain any of the land uses identified as typically associated with emissions of objectionable odors. As such, a less than significant impact would occur.

CUMULATIVE AIR QUALITY IMPACTS

The cumulative setting for air quality includes San Bernardino County and the MDAB. The region is designated as a nonattainment area for the federal O_3 and PM_{10} standards and is also a nonattainment area for the state standards for O_3, PM_{10}, and $PM_{2.5}$ standards (CARB 2017a). Cumulative growth in population, vehicle use, and industrial activity could inhibit efforts to improve regional air quality and attain the ambient air quality standards. Thus, the setting for this cumulative analysis consists of the MDAB and associated growth and development anticipated in the air basin.

The MDAQMD's approach to assessing cumulative impacts is based on whether a proposed project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations. In other words, the MDAQMD considers the impact of a project to be less than

cumulatively considerable if it does not exceed significance thresholds under project-level conditions and does not conflict with the MDAQMD's air quality plans. As identified above in **Table 2-4,** the Project would not exceed MDAQMD construction significance thresholds and would not be a source of operation air quality emissions. Additionally, as previously described the Project would not conflict with any MDAQMD air quality plans. Thus, the Project would result in less than significant cumulative air quality impacts.

3.0 GREENHOUSE GAS EMISSIONS

3.1 Greenhouse Gas Setting

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. Because the earth has a much lower temperature than the sun, it emits lower-frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth. Without the greenhouse effect, the earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Fluorinated gases also make up a small fraction of the GHGs that contribute to climate change. Fluorinated gases include chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride; however, it is noted that these gases are not associated with typical land use development. Human-caused emissions of these GHGs in excess of natural ambient concentrations are believed to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic factors together (IPCC 2014).

Table 3-1 describes the primary GHGs attributed to global climate change, including their physical properties, primary sources, and contributions to the greenhouse effect.

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. CH_4 traps over 25 times more heat per molecule than CO_2, and N_2O absorbs 298 times more heat per molecule than CO_2 (IPCC 2014). Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO_2e), which weight each gas by its global warming potential (GWP). Expressing GHG emissions in CO_2e takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, or other forms. Of the total annual human-caused CO_2 emissions, approximately 55 percent is sequestered through ocean and land uptakes every

year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO_2 emissions remains stored in the atmosphere (IPCC 2013).

Table 3-1. Greenhouse Gases

Greenhouse Gas	Description
CO_2	Carbon dioxide is a colorless, odorless gas. CO_2 is emitted in a number of ways, both naturally and through human activities. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to CO_2 emissions. The atmospheric lifetime of CO_2 is variable because it is so readily exchanged in the atmosphere.[1]
CH_4	Methane is a colorless, odorless gas and is the major component of natural gas, about 87 percent by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. Methane is emitted from a variety of both human-related and natural sources. Human-related sources include fossil fuel production, animal husbandry (intestinal fermentation in livestock and manure management), rice cultivation, biomass burning, and waste management. These activities release significant quantities of CH_4 to the atmosphere. Natural sources of CH_4 include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires. The atmospheric lifetime of CH_4 is about12 years.[2]
N_2O	Nitrous oxide is a clear, colorless gas with a slightly sweet odor. Nitrous oxide is produced by both natural and human-related sources. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. N_2O is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N_2O is approximately 120 years.[3]

Sources: [1] EPA 2016a, [2] EPA 2016b, [3] EPA 2016c

The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice it to say the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature or to global, local, or microclimates. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

Sources of Greenhouse Gas Emissions

In June 2017, CARB released the 2017 edition of the California GHG inventory covering calendar year 2015 emissions. In 2015, California emitted 440.4 million gross metric tons of CO_2e including from imported electricity. Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2015, accounting for approximately 37 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) (19 percent) (CARB 2017b).

Emissions of CO_2 are by-products of fossil fuel combustion. CH_4, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. N_2O is also largely attributable to agricultural practices and soil management. Carbon dioxide sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution (CO_2 dissolving into the water), respectively, two of the most common processes for removing carbon dioxide from the atmosphere.

3.2 Regulatory Framework

State

Executive Order S-3-05

Executive Order (EO) S-3-05, signed by Governor Arnold Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the executive order established total GHG emission targets for the state. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

While dated, this executive order remains relevant because a more recent California Appellate Court decision, Cleveland National Forest Foundation v. San Diego Association of Governments (November 24, 2014) 231 Cal.App.4th 1056, examined whether it should be viewed as having the equivalent force of a legislative mandate for specific emissions reductions. While the California Supreme Court ruled that the San Diego Association of Governments did not abuse its discretion by declining "to adopt the 2050 goal as a measure of significance in light of the fact that the Executive Order does not specify any plan or implementation measures to achieve its goal, the decision also recognized that the goal of a 40 percent reduction in 1990 GHG levels by 2030 is "widely acknowledged" as a "necessary interim target to ensure that California meets its longer-range goal of reducing greenhouse gas emissions 80 percent below 1990 levels by the year 2050.

Assembly Bill 32, the California Global Warming Solutions Act of 2006

In September 2006, Governor Schwarzenegger signed the California Global Warming Solutions Act of 2006, Assembly Bill (AB) 32. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. AB 32 also requires that these reductions "…shall remain in effect unless otherwise amended or repealed. (b) It is the intent of the Legislature that the statewide greenhouse gas emissions limit continue in existence and be used to maintain and continue reductions in emissions of greenhouse gases beyond 2020. (c) The [Air Resources Board] shall make recommendations to the Governor and the Legislature on how to continue reductions of greenhouse gas emissions beyond 2020." [California Health and Safety Code, Division 25.5, Part 3, Section 38551]

Assembly Bill 32 Climate Change Scoping Plan and Updates

In December 2008, CARB adopted its Climate Change Scoping Plan, which contains the main strategies California will implement to achieve reduction of approximately 118 million metric tons of CO_2e emissions, or approximately 21.7 percent from the State's projected 2020 emission level of 545 million metric tons of CO_2e under a business-as-usual scenario (this is a reduction of 47 million metric tons of CO_2e, or almost 10 percent, from 2008 emissions). In May 2014, CARB released and subsequently adopted the First Update to the Climate Change Scoping Plan to identify the next steps in reaching AB 32 goals and evaluate progress that has been made between 2000 and 2012. According to the update, California is on track to meet the near-term 2020 GHG limit and is well positioned to maintain and continue reductions beyond

2020. The update also reports the trends in GHG emissions from various emissions sectors (e.g., transportation, building energy, agriculture).

In 2017, CARB released its 2017 Climate Change Scoping Plan Update (2017 Scoping Plan Update), which lays out the framework for achieving the 2030 reductions as established in more recent legislation (discussed below). The 2017 Scoping Plan Update identifies the GHG reductions needed by each emissions sector to achieve a statewide emissions level that is 40 percent below 1990 levels before 2030.

The update also identifies how GHGs associated with proposed projects could be evaluated under CEQA. Specifically, it states that achieving "no net increase" in GHG emissions is the correct overall objective of projects evaluated under CEQA if conformity with an applicable local GHG reduction plan cannot be demonstrated. CARB recognizes that it may not be appropriate or feasible for every development project to mitigate its GHG emissions to no net increase and that this may not necessarily imply a substantial contribution to the cumulatively significant environmental impact of climate change.

Executive Order B-30-15

On April 20, 2015 Governor Brown signed Executive Order B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's GHG reduction targets with those of leading international governments such as the 28-nation European Union, which adopted the same target in October 2014. California is on track to meet or exceed the target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32, discussed above). California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the U.S. to limit global warming below 2 degrees Celsius, the warming threshold at which major climate disruptions are projected, such as super droughts and rising sea levels.

Senate Bill 32 and Assembly Bill 197 of 2016

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the State's continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050.

Senate Bill X1-2 of 2011 and Senate Bill 350 of 2015

SB X1-2 of 2011 requires all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 sets a three-stage compliance period requiring all California utilities, including independently-owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. SB X1-2 also requires the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California. SB X1-2 mandates that renewables from these sources make up at least 50

percent of the total renewable energy for the 2011-2013 compliance period, at least 65 percent for the 2014-2016 compliance period, and at least 75 percent for 2016 and beyond. In October 2015, SB 350 was signed by Governor Brown, which requires retail sellers and publicly-owned utilities to procure 50 percent of their electricity from renewable resources by 2030.

Local

Mojave Desert Air Quality Management District

Under CEQA, the MDAQMD is an expert commenting agency on air quality and related matters within its jurisdiction or impacting on its jurisdiction. The MDAQMD provides guidelines to assessing the significance of project specific GHG emissions and offers both daily and annual thresholds for GHG emissions.

County of San Bernardino Greenhouse Gas Emissions Reduction Plan

In September 2011, the County of San Bernardino adopted the San Bernardino GHG Reduction Plan (GHG Plan) based on the premise that the County and the community it represents are uniquely capable of addressing emissions associated with sources under the County's jurisdiction and that the County's emission reduction efforts should coordinate with the state strategies of reducing emissions in order to reduce emissions in an efficient and cost-effective manner. This GHG Plan presents a comprehensive set of actions to reduce the County's internal and external GHG emissions to 15 percent below current levels by 2020, consistent with the AB 32 Scoping Plan. The GHG Plan identifies GHG emissions reduction goals, objectives, and strategies categorized in six sectors: Building Energy (addressing energy efficiency and alternative energy in buildings and renewable energy generation facilities), Transportation and Land Use, Solid Waste/Landfills, Stationary Sources, Agriculture and Resource Conservation, and Water Conservation. For each sector, reduction strategies have been developed to achieve the County's 2020 emissions reduction target.

The March 2015 update of the GHG Emissions Development Review Process updates the language the performance standard bringing it up to date with current code and improves upon the menu of options within the screening tables proportioning point values to more accurately account for expected GHG reductions and revised the descriptions of the energy efficiency related options to better describe the physical improvements that would be made in choosing that option.

3.3 Greenhouse Gas Emissions Impact Assessment

Thresholds of Significance

The impact analysis provided below is based on the following California Environmental Quality Act (CEQA) Guidelines Appendix G thresholds of significance. The Project would result in a significant impact to GHG emissions if it would:

1) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

2) Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Project GHG Thresholds

As noted earlier, AB 32 is a legal mandate requiring that statewide GHG emissions be reduced to 1990 levels by 2020. In adopting AB 32, the legislature determined the necessary GHG reductions for the state to make in order to sufficiently offset its contribution to the cumulative climate change problem. AB 32 is a legally mandated requirement for the reduction of GHGs. As such, compliance with AB 32 is the current adopted basis upon which an agency can base its significance threshold for evaluating a project's GHG impacts. However, it is acknowledged that the recently signed legislation of SB 32 has established in GHG emission reduction targets for years beyond 2020.

For the purposes of this evaluation, the Project is evaluated for consistency with the County of San Bernardino GHG Emissions Reduction Plan, previously described. The CAP is consistent with AB 32 and sets the County on a path to achieve a more substantial long-term reduction in the post-2020 period. In addition, the Project will also be compared to the interim screening level numeric bright-line threshold of 3,000 metric tons of CO_2e annually adopted in the GHG Emissions Reduction Plan. The numeric bright line threshold was developed to be consistent with CEQA requirements for developing significance thresholds, are supported by substantial evidence, and provide guidance to CEQA practitioners and lead agencies with regard to determining whether GHG emissions from a proposed project are significant.

Methodology

Where quantification was required, GHG emissions were modeled using the California Emissions Estimator Model (CalEEMod), version 2016.3.2. CalEEMod is a statewide land use emissions computer model designed to quantify potential GHG emissions associated with both construction and operations from a variety of land use projects. Project construction-generated air pollutant emissions were primarily calculated using CalEEMod model defaults for San Bernardino County. However, the specific construction equipment anticipated to be used has been provided by the Project proponent and accounted for in the emissions model predictions.

Impact Analysis

CONTRIBUTION OF GREENHOUSE GAS EMISSIONS

Construction

Construction-related activities that would generate GHGs include worker commute trips, haul trucks carrying supplies and materials to and from the Project site, and off-road construction equipment (e.g., dozers, loaders, excavators). Projected GHG emissions from construction have been quantified and amortized over the life of the Project. **Table 3-2** illustrates the specific construction-generated GHG emissions that would result from construction of the Project.

Table 3-2. Construction-Related Greenhouse Gas Emissions	
Emissions Source	CO_2e (Metric Tons/ Year)
Year 2020	826
County of San Bernardino GHG Reduction Plan	3,000
Exceed Threshold?	No

*Source: CalEEMod version 2016.3.2. Refer to **Attachment A** for Model Data Outputs.*

Notes: Emission estimates account for the grading of 84,480 square feet as well as the removal of 1,016 tons of debris.

As shown in **Table 3-2**, Project construction would result in the generation of approximately 826 metric tons of CO_2e over the course of construction. Project emissions do not exceed the County of San Bernardino Greenhouse Gas Emissions Reduction Plan screening threshold of 3,000 metric tons of CO_2e per year. Therefore, the impact is less than significant.

Operations

In terms of operational GHG emissions, the Proposed Project involves the construction of 2 miles bike lanes and paths. The Proposed Project will not include the provision of new permanent stationary or mobile sources of emissions, and therefore, by its very nature, will not generate quantifiable GHG emissions from Project operations. The Project does not propose any buildings and therefore no permanent source or stationary source emissions. Furthermore, the Project could be expected to reduce vehicle trips in the area due to its ability meet the identified need for a non-vehicular trail for the local residents in the community. This potential reduction of automobile trips attributable to the Project would reduce the amount of daily CO_2e emissions currently being generated. Thus, there would be no operational impact related to air quality.

CONFLICT WITH ANY APPLICABLE PLAN, POLICY, OR REGULATION OF AN AGENCY ADOPTED FOR THE PURPOSE OF REDUCING THE EMISSIONS OF GREENHOUSE GASES

The County of San Bernardino GHG Reduction Plan establishes a GHG emissions reduction target for the year 2020 that is 15 percent below year 2007 emission levels. The GHG Plan is consistent with AB 32 and sets the County on a path to achieve a more substantial long-term reduction in the post-2020 period. Achieving this level of emissions would ensure that the contribution to GHG emissions from activities covered by the GHG Reduction Plan would not be cumulatively considerable. As described in Chapter 4.0 of the GHG Plan, all new development under the jurisdiction of the County is required to quantify a project's GHG emissions and adopt feasible mitigation to reduce project emissions below a level of significance.

The County GHG Reduction Plan identifies a review standard of 3,000 metric tons of CO_2e per year to identify and mitigate project emissions. Projects estimated to generated less than 3,000 metric tons of CO_2e per year are considered less than significant. For projects exceeding 3,000 metric tons of CO_2e per year, the developer may use the GHG Reduction Plan Screening Tables in the GHG Reduction Plan as a tool to assist with calculating GHG reduction measures and the determination of a significance finding.

Projects that garner 100 or more points on the Screening Tables are considered less than significant. (The point system was devised to ensure project compliance with the reduction measures in the GHG Plan such that the GHG emissions from new development, when considered together with those from existing development, would allow the County to meet its year 2020 target and support longer-term reductions in GHG emissions beyond year 2020.)

As shown in **Table 3-2**, above, the total amount of proposed GHG emissions would be 826 metric tons of CO_2e per year, which does not exceed the County's 3,000 metric tons of CO_2e per year screening threshold. Therefore, the Project does not conflict with the San Bernardino Greenhouse Gas Emissions Reduction Plan. No impact would occur.

CUMULATIVE GHG IMPACTS

Climate change is a global problem. And GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have much longer atmospheric lifetimes of 1 year to several thousand years that allow them to be dispersed around the globe.

It is generally the case that an individual project of this size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory. GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective. The additive effect of Project-related GHGs would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. In addition, the Proposed Project as well as other cumulative related projects would also be subject to all applicable regulatory requirements, which would further reduce GHG emissions. As previously discussed, the Proposed Project would not exceed MDAQMD significance thresholds and would actually assist to reduce automobile-generated GHG emissions. Therefore, the Project's cumulative contribution of GHG emissions would be less than significant.

4.0 REFERENCES

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ATTACHMENT A

CalEEMod Output Files

Sunburst Avenue Bike Trail

San Bernardino-Mojave Desert County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	84.48	1000sqft	1.94	84,480.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Time of construction updated to match that of the project.

Off-road Equipment - Equipment updated to match that of the project.

Off-road Equipment -

Off-road Equipment - Information updated to match that of the project.

Off-road Equipment -

Off-road Equipment - Equipment updated to match thatof the project.

Off-road Equipment -

Grading - Infomration updated to match that of the project

Demolition -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	90.00
tblConstructionPhase	NumDays	200.00	90.00
tblConstructionPhase	NumDays	4.00	30.00
tblConstructionPhase	NumDays	10.00	90.00
tblConstructionPhase	PhaseEndDate	5/21/2020	11/16/2020
tblConstructionPhase	PhaseEndDate	4/23/2020	11/16/2020
tblConstructionPhase	PhaseEndDate	7/10/2019	5/28/2020
tblConstructionPhase	PhaseEndDate	7/18/2019	7/13/2020
tblConstructionPhase	PhaseEndDate	5/7/2020	11/16/2020
tblConstructionPhase	PhaseEndDate	7/12/2019	6/1/2020
tblConstructionPhase	PhaseStartDate	5/8/2020	7/14/2020
tblConstructionPhase	PhaseStartDate	7/19/2019	7/14/2020
tblConstructionPhase	PhaseStartDate	6/13/2019	5/1/2020
tblConstructionPhase	PhaseStartDate	7/13/2019	6/2/2020

tblConstructionPhase	PhaseStartDate	4/24/2020	7/14/2020
tblConstructionPhase	PhaseStartDate	7/11/2019	5/29/2020
tblGrading	AcresOfGrading	112.50	1.50
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.30	0.30
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.44	0.44
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.44	0.44
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.30	0.30
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards

tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Surfacing Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Surfacing Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblTripsAndVMT	WorkerTripNumber	20.00	18.00
tblTripsAndVMT	WorkerTripNumber	38.00	35.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.6499	6.5131	4.6815	9.4300e-003	0.1223	0.2889	0.4112	0.0519	0.2683	0.3202	0.0000	820.8041	820.8041	0.2341	0.0000	826.6553
Maximum	**0.6499**	**6.5131**	**4.6815**	**9.4300e-003**	**0.1223**	**0.2889**	**0.4112**	**0.0519**	**0.2683**	**0.3202**	**0.0000**	**820.8041**	**820.8041**	**0.2341**	**0.0000**	**826.6553**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.6499	6.5131	4.6815	9.4300e-003	0.1223	0.2889	0.4112	0.0519	0.2683	0.3202	0.0000	820.8032	820.8032	0.2341	0.0000	826.6544
Maximum	**0.6499**	**6.5131**	**4.6815**	**9.4300e-003**	**0.1223**	**0.2889**	**0.4112**	**0.0519**	**0.2683**	**0.3202**	**0.0000**	**820.8032**	**820.8032**	**0.2341**	**0.0000**	**826.6544**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
4	**3-13-2020**	**6-12-2020**	0.7566	0.7566
5	**6-13-2020**	**9-12-2020**	3.5397	3.5397
6	**9-13-2020**	**9-30-2020**	0.7961	0.7961
		Highest	3.5397	3.5397

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.4700e-003	1.0000e-005	7.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5100e-003	1.5100e-003	0.0000	0.0000	1.6100e-003
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	**8.4700e-003**	**1.0000e-005**	**7.8000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.5100e-003**	**1.5100e-003**	**0.0000**	**0.0000**	**1.6100e-003**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.4700e-003	1.0000e-005	7.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5100e-003	1.5100e-003	0.0000	0.0000	1.6100e-003
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	**8.4700e-003**	**1.0000e-005**	**7.8000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.5100e-003**	**1.5100e-003**	**0.0000**	**0.0000**	**1.6100e-003**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/1/2020	5/28/2020	5	20	
2	Site Preparation	Site Preparation	5/29/2020	6/1/2020	5	2	
3	Grading	Grading	6/2/2020	7/13/2020	5	30	
4	Building Construction	Building Construction	7/14/2020	11/16/2020	5	90	
5	Paving	Paving	7/14/2020	11/16/2020	5	90	
6	Architectural Coating	Architectural Coating	7/14/2020	11/16/2020	5	90	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 1.94

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 5,069 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Paving	Signal Boards	2	8.00	6	0.82
Paving	Skid Steer Loaders	2	8.00	65	0.37
Paving	Surfacing Equipment	1	8.00	263	0.30
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	6.00	130	0.42
Paving	Rollers	3	7.00	80	0.38
Grading	Crawler Tractors	2	8.00	212	0.43

Building Construction	Crawler Tractors	2	8.00	212	0.43
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	2	6.00	187	0.41
Paving	Paving Equipment	1	8.00	132	0.36
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Building Construction	Cranes	1	6.00	231	0.29
Demolition	Excavators	1	8.00	158	0.38
Demolition	Graders	1	8.00	187	0.41
Demolition	Scrapers	1	8.00	367	0.48
Demolition	Signal Boards	2	8.00	6	0.82
Grading	Off-Highway Tractors	1	8.00	124	0.44
Grading	Rollers	1	8.00	80	0.38
Grading	Scrapers	2	8.00	367	0.48
Grading	Signal Boards	2	8.00	6	0.82
Grading	Skid Steer Loaders	2	8.00	65	0.37
Grading	Trenchers	1	8.00	78	0.50
Building Construction	Excavators	2	8.00	158	0.38
Building Construction	Graders	2	8.00	187	0.41
Building Construction	Off-Highway Tractors	1	8.00	124	0.44
Building Construction	Pavers	1	8.00	130	0.42
Building Construction	Paving Equipment	1	8.00	132	0.36
Building Construction	Rollers	1	8.00	80	0.38
Building Construction	Rough Terrain Forklifts	1	8.00	100	0.40

Building Construction	Scrapers	2	8.00	367	0.48
Building Construction	Signal Boards	2	8.00	6	0.82
Building Construction	Skid Steer Loaders	2	8.00	65	0.37
Building Construction	Surfacing Equipment	1	8.00	263	0.30
Building Construction	Trenchers	1	8.00	78	0.50
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Welders	3	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	8	18.00	0.00	100.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	15	35.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	26	35.00	14.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	12	30.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	7.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0110	0.0000	0.0110	1.6700e-003	0.0000	1.6700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0354	0.3800	0.2329	4.6000e-004		0.0169	0.0169		0.0158	0.0158	0.0000	40.2523	40.2523	0.0114	0.0000	40.5379
Total	**0.0354**	**0.3800**	**0.2329**	**4.6000e-004**	**0.0110**	**0.0169**	**0.0280**	**1.6700e-003**	**0.0158**	**0.0174**	**0.0000**	**40.2523**	**40.2523**	**0.0114**	**0.0000**	**40.5379**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.2000e-004	0.0126	1.9300e-003	4.0000e-005	8.6000e-004	4.0000e-005	9.0000e-004	2.4000e-004	4.0000e-005	2.7000e-004	0.0000	3.7357	3.7357	2.1000e-004	0.0000	3.7410
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	7.1000e-004	5.3000e-004	5.3900e-003	1.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.9000e-004	1.0000e-005	3.9000e-004	0.0000	1.2526	1.2526	4.0000e-005	0.0000	1.2535
Total	**1.0300e-003**	**0.0132**	**7.3200e-003**	**5.0000e-005**	**2.3100e-003**	**5.0000e-005**	**2.3600e-003**	**6.3000e-004**	**5.0000e-005**	**6.6000e-004**	**0.0000**	**4.9883**	**4.9883**	**2.5000e-004**	**0.0000**	**4.9946**

3.2 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0110	0.0000	0.0110	1.6700e-003	0.0000	1.6700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0354	0.3800	0.2329	4.6000e-004		0.0169	0.0169		0.0158	0.0158	0.0000	40.2522	40.2522	0.0114	0.0000	40.5378
Total	**0.0354**	**0.3800**	**0.2329**	**4.6000e-004**	**0.0110**	**0.0169**	**0.0280**	**1.6700e-003**	**0.0158**	**0.0174**	**0.0000**	**40.2522**	**40.2522**	**0.0114**	**0.0000**	**40.5378**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.2000e-004	0.0126	1.9300e-003	4.0000e-005	8.6000e-004	4.0000e-005	9.0000e-004	2.4000e-004	4.0000e-005	2.7000e-004	0.0000	3.7357	3.7357	2.1000e-004	0.0000	3.7410
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	7.1000e-004	5.3000e-004	5.3900e-003	1.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.9000e-004	1.0000e-005	3.9000e-004	0.0000	1.2526	1.2526	4.0000e-005	0.0000	1.2535
Total	**1.0300e-003**	**0.0132**	**7.3200e-003**	**5.0000e-005**	**2.3100e-003**	**5.0000e-005**	**2.3600e-003**	**6.3000e-004**	**5.0000e-005**	**6.6000e-004**	**0.0000**	**4.9883**	**4.9883**	**2.5000e-004**	**0.0000**	**4.9946**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6300e-003	0.0184	7.7100e-003	2.0000e-005		8.2000e-004	8.2000e-004		7.6000e-004	7.6000e-004	0.0000	1.5127	1.5127	4.9000e-004	0.0000	1.5249
Total	**1.6300e-003**	**0.0184**	**7.7100e-003**	**2.0000e-005**	**5.8000e-003**	**8.2000e-004**	**6.6200e-003**	**2.9500e-003**	**7.6000e-004**	**3.7100e-003**	**0.0000**	**1.5127**	**1.5127**	**4.9000e-004**	**0.0000**	**1.5249**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.4000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0557	0.0557	0.0000	0.0000	0.0557
Total	**3.0000e-005**	**2.0000e-005**	**2.4000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0557**	**0.0557**	**0.0000**	**0.0000**	**0.0557**

3.3 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6300e-003	0.0184	7.7100e-003	2.0000e-005		8.2000e-004	8.2000e-004		7.6000e-004	7.6000e-004	0.0000	1.5127	1.5127	4.9000e-004	0.0000	1.5249
Total	**1.6300e-003**	**0.0184**	**7.7100e-003**	**2.0000e-005**	**5.8000e-003**	**8.2000e-004**	**6.6200e-003**	**2.9500e-003**	**7.6000e-004**	**3.7100e-003**	**0.0000**	**1.5127**	**1.5127**	**4.9000e-004**	**0.0000**	**1.5249**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.4000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0557	0.0557	0.0000	0.0000	0.0557
Total	**3.0000e-005**	**2.0000e-005**	**2.4000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0557**	**0.0557**	**0.0000**	**0.0000**	**0.0557**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0685	0.0000	0.0685	0.0373	0.0000	0.0373	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0902	1.0465	0.5812	1.2200e-003		0.0448	0.0448		0.0413	0.0413	0.0000	106.6857	106.6857	0.0342	0.0000	107.5409
Total	**0.0902**	**1.0465**	**0.5812**	**1.2200e-003**	**0.0685**	**0.0448**	**0.1133**	**0.0373**	**0.0413**	**0.0786**	**0.0000**	**106.6857**	**106.6857**	**0.0342**	**0.0000**	**107.5409**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0700e-003	1.5500e-003	0.0157	4.0000e-005	4.2300e-003	3.0000e-005	4.2600e-003	1.1200e-003	3.0000e-005	1.1500e-003	0.0000	3.6534	3.6534	1.1000e-004	0.0000	3.6562
Total	**2.0700e-003**	**1.5500e-003**	**0.0157**	**4.0000e-005**	**4.2300e-003**	**3.0000e-005**	**4.2600e-003**	**1.1200e-003**	**3.0000e-005**	**1.1500e-003**	**0.0000**	**3.6534**	**3.6534**	**1.1000e-004**	**0.0000**	**3.6562**

3.4 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0685	0.0000	0.0685	0.0373	0.0000	0.0373	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0902	1.0465	0.5812	1.2200e-003		0.0448	0.0448		0.0413	0.0413	0.0000	106.6856	106.6856	0.0342	0.0000	107.5408
Total	**0.0902**	**1.0465**	**0.5812**	**1.2200e-003**	**0.0685**	**0.0448**	**0.1133**	**0.0373**	**0.0413**	**0.0786**	**0.0000**	**106.6856**	**106.6856**	**0.0342**	**0.0000**	**107.5408**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0700e-003	1.5500e-003	0.0157	4.0000e-005	4.2300e-003	3.0000e-005	4.2600e-003	1.1200e-003	3.0000e-005	1.1500e-003	0.0000	3.6534	3.6534	1.1000e-004	0.0000	3.6562
Total	**2.0700e-003**	**1.5500e-003**	**0.0157**	**4.0000e-005**	**4.2300e-003**	**3.0000e-005**	**4.2600e-003**	**1.1200e-003**	**3.0000e-005**	**1.1500e-003**	**0.0000**	**3.6534**	**3.6534**	**1.1000e-004**	**0.0000**	**3.6562**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3863	4.1122	2.8657	5.7100e-003		0.1796	0.1796		0.1670	0.1670	0.0000	494.5515	494.5515	0.1478	0.0000	498.2467
Total	**0.3863**	**4.1122**	**2.8657**	**5.7100e-003**		**0.1796**	**0.1796**		**0.1670**	**0.1670**	**0.0000**	**494.5515**	**494.5515**	**0.1478**	**0.0000**	**498.2467**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0100e-003	0.0686	0.0144	1.8000e-004	4.2000e-003	3.2000e-004	4.5300e-003	1.2100e-003	3.1000e-004	1.5200e-003	0.0000	16.7427	16.7427	1.1200e-003	0.0000	16.7708
Worker	6.2100e-003	4.6500e-003	0.0472	1.2000e-004	0.0127	9.0000e-005	0.0128	3.3700e-003	8.0000e-005	3.4500e-003	0.0000	10.9600	10.9600	3.4000e-004	0.0000	10.9685
Total	**8.2200e-003**	**0.0733**	**0.0615**	**3.0000e-004**	**0.0169**	**4.1000e-004**	**0.0173**	**4.5800e-003**	**3.9000e-004**	**4.9700e-003**	**0.0000**	**27.7027**	**27.7027**	**1.4600e-003**	**0.0000**	**27.7393**

3.5 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3863	4.1122	2.8657	5.7100e-003		0.1796	0.1796		0.1670	0.1670	0.0000	494.5509	494.5509	0.1478	0.0000	498.2461
Total	**0.3863**	**4.1122**	**2.8657**	**5.7100e-003**		**0.1796**	**0.1796**		**0.1670**	**0.1670**	**0.0000**	**494.5509**	**494.5509**	**0.1478**	**0.0000**	**498.2461**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0100e-003	0.0686	0.0144	1.8000e-004	4.2000e-003	3.2000e-004	4.5300e-003	1.2100e-003	3.1000e-004	1.5200e-003	0.0000	16.7427	16.7427	1.1200e-003	0.0000	16.7708
Worker	6.2100e-003	4.6500e-003	0.0472	1.2000e-004	0.0127	9.0000e-005	0.0128	3.3700e-003	8.0000e-005	3.4500e-003	0.0000	10.9600	10.9600	3.4000e-004	0.0000	10.9685
Total	**8.2200e-003**	**0.0733**	**0.0615**	**3.0000e-004**	**0.0169**	**4.1000e-004**	**0.0173**	**4.5800e-003**	**3.9000e-004**	**4.9700e-003**	**0.0000**	**27.7027**	**27.7027**	**1.4600e-003**	**0.0000**	**27.7393**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0757	0.7874	0.7769	1.3700e-003		0.0412	0.0412		0.0380	0.0380	0.0000	118.3260	118.3260	0.0371	0.0000	119.2521
Paving	2.5400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0782**	**0.7874**	**0.7769**	**1.3700e-003**		**0.0412**	**0.0412**		**0.0380**	**0.0380**	**0.0000**	**118.3260**	**118.3260**	**0.0371**	**0.0000**	**119.2521**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3200e-003	3.9900e-003	0.0404	1.0000e-004	0.0109	8.0000e-005	0.0110	2.8900e-003	7.0000e-005	2.9600e-003	0.0000	9.3943	9.3943	2.9000e-004	0.0000	9.4016
Total	**5.3200e-003**	**3.9900e-003**	**0.0404**	**1.0000e-004**	**0.0109**	**8.0000e-005**	**0.0110**	**2.8900e-003**	**7.0000e-005**	**2.9600e-003**	**0.0000**	**9.3943**	**9.3943**	**2.9000e-004**	**0.0000**	**9.4016**

3.6 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0757	0.7874	0.7769	1.3700e-003		0.0412	0.0412		0.0380	0.0380	0.0000	118.3258	118.3258	0.0371	0.0000	119.2520
Paving	2.5400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0782**	**0.7874**	**0.7769**	**1.3700e-003**		**0.0412**	**0.0412**		**0.0380**	**0.0380**	**0.0000**	**118.3258**	**118.3258**	**0.0371**	**0.0000**	**119.2520**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3200e-003	3.9900e-003	0.0404	1.0000e-004	0.0109	8.0000e-005	0.0110	2.8900e-003	7.0000e-005	2.9600e-003	0.0000	9.3943	9.3943	2.9000e-004	0.0000	9.4016
Total	**5.3200e-003**	**3.9900e-003**	**0.0404**	**1.0000e-004**	**0.0109**	**8.0000e-005**	**0.0110**	**2.8900e-003**	**7.0000e-005**	**2.9600e-003**	**0.0000**	**9.3943**	**9.3943**	**2.9000e-004**	**0.0000**	**9.4016**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0294					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0109	0.0758	0.0824	1.3000e-004		4.9900e-003	4.9900e-003		4.9900e-003	4.9900e-003	0.0000	11.4896	11.4896	8.9000e-004	0.0000	11.5119
Total	**0.0403**	**0.0758**	**0.0824**	**1.3000e-004**		**4.9900e-003**	**4.9900e-003**		**4.9900e-003**	**4.9900e-003**	**0.0000**	**11.4896**	**11.4896**	**8.9000e-004**	**0.0000**	**11.5119**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	9.3000e-004	9.4300e-003	2.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.7000e-004	2.0000e-005	6.9000e-004	0.0000	2.1920	2.1920	7.0000e-005	0.0000	2.1937
Total	**1.2400e-003**	**9.3000e-004**	**9.4300e-003**	**2.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.7000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.1920**	**2.1920**	**7.0000e-005**	**0.0000**	**2.1937**

3.7 Architectural Coating - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0294					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0109	0.0758	0.0824	1.3000e-004		4.9900e-003	4.9900e-003		4.9900e-003	4.9900e-003	0.0000	11.4896	11.4896	8.9000e-004	0.0000	11.5119
Total	**0.0403**	**0.0758**	**0.0824**	**1.3000e-004**		**4.9900e-003**	**4.9900e-003**		**4.9900e-003**	**4.9900e-003**	**0.0000**	**11.4896**	**11.4896**	**8.9000e-004**	**0.0000**	**11.5119**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	9.3000e-004	9.4300e-003	2.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.7000e-004	2.0000e-005	6.9000e-004	0.0000	2.1920	2.1920	7.0000e-005	0.0000	2.1937
Total	**1.2400e-003**	**9.3000e-004**	**9.4300e-003**	**2.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.7000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.1920**	**2.1920**	**7.0000e-005**	**0.0000**	**2.1937**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

	Average Daily Trip 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 Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	9.50	7.30	7.30	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	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
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

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
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**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/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	MT/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	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.4700e-003	1.0000e-005	7.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5100e-003	1.5100e-003	0.0000	0.0000	1.6100e-003
Unmitigated	8.4700e-003	1.0000e-005	7.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5100e-003	1.5100e-003	0.0000	0.0000	1.6100e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.9400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.4600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-005	1.0000e-005	7.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5100e-003	1.5100e-003	0.0000	0.0000	1.6100e-003
Total	**8.4700e-003**	**1.0000e-005**	**7.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.5100e-003**	**1.5100e-003**	**0.0000**	**0.0000**	**1.6100e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.9400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.4600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-005	1.0000e-005	7.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5100e-003	1.5100e-003	0.0000	0.0000	1.6100e-003
Total	**8.4700e-003**	**1.0000e-005**	**7.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.5100e-003**	**1.5100e-003**	**0.0000**	**0.0000**	**1.6100e-003**

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

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/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

Category/Year

	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

Unmitigated

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

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/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 Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Sunburst Avenue Bike Trail

San Bernardino-Mojave Desert County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	84.48	1000sqft	1.94	84,480.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Time of construction updated to match that of the project.

Off-road Equipment - Equipment updated to match that of the project.

Off-road Equipment -

Off-road Equipment - Information updated to match that of the project.

Off-road Equipment -

Off-road Equipment - Equipment updated to match thatof the project.

Off-road Equipment -

Grading - Infomration updated to match that of the project

Demolition -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	90.00
tblConstructionPhase	NumDays	200.00	90.00
tblConstructionPhase	NumDays	4.00	30.00
tblConstructionPhase	NumDays	10.00	90.00
tblConstructionPhase	PhaseEndDate	5/21/2020	11/16/2020
tblConstructionPhase	PhaseEndDate	4/23/2020	11/16/2020
tblConstructionPhase	PhaseEndDate	7/10/2019	5/28/2020
tblConstructionPhase	PhaseEndDate	7/18/2019	7/13/2020
tblConstructionPhase	PhaseEndDate	5/7/2020	11/16/2020
tblConstructionPhase	PhaseEndDate	7/12/2019	6/1/2020
tblConstructionPhase	PhaseStartDate	5/8/2020	7/14/2020
tblConstructionPhase	PhaseStartDate	7/19/2019	7/14/2020
tblConstructionPhase	PhaseStartDate	6/13/2019	5/1/2020
tblConstructionPhase	PhaseStartDate	7/13/2019	6/2/2020

tblConstructionPhase	PhaseStartDate	4/24/2020	7/14/2020
tblConstructionPhase	PhaseStartDate	7/11/2019	5/29/2020
tblGrading	AcresOfGrading	112.50	1.50
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.30	0.30
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.44	0.44
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.44	0.44
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.30	0.30
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards

tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Surfacing Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Surfacing Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblTripsAndVMT	WorkerTripNumber	20.00	18.00
tblTripsAndVMT	WorkerTripNumber	38.00	35.00

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					
2020	11.5796	112.2624	85.5406	0.1703	5.8653	5.0287	7.8459	2.9711	4.6774	5.3166	0.0000	16,313.2238	16,313.2238	4.5949	0.0000	16,428.0967
Maximum	**11.5796**	**112.2624**	**85.5406**	**0.1703**	**5.8653**	**5.0287**	**7.8459**	**2.9711**	**4.6774**	**5.3166**	**0.0000**	**16,313.2238**	**16,313.2238**	**4.5949**	**0.0000**	**16,428.0967**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	11.5796	112.2624	85.5406	0.1703	5.8653	5.0287	7.8459	2.9711	4.6774	5.3166	0.0000	16,313.2238	16,313.2238	4.5949	0.0000	16,428.0967
Maximum	**11.5796**	**112.2624**	**85.5406**	**0.1703**	**5.8653**	**5.0287**	**7.8459**	**2.9711**	**4.6774**	**5.3166**	**0.0000**	**16,313.2238**	**16,313.2238**	**4.5949**	**0.0000**	**16,428.0967**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0468	8.0000e-005	8.6600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0185	0.0185	5.0000e-005		0.0197
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	**0.0468**	**8.0000e-005**	**8.6600e-003**	**0.0000**	**0.0000**	**3.0000e-005**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**3.0000e-005**		**0.0185**	**0.0185**	**5.0000e-005**	**0.0000**	**0.0197**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0468	8.0000e-005	8.6600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0185	0.0185	5.0000e-005		0.0197
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	**0.0468**	**8.0000e-005**	**8.6600e-003**	**0.0000**	**0.0000**	**3.0000e-005**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**3.0000e-005**		**0.0185**	**0.0185**	**5.0000e-005**	**0.0000**	**0.0197**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/1/2020	5/28/2020	5	20	
2	Site Preparation	Site Preparation	5/29/2020	6/1/2020	5	2	
3	Grading	Grading	6/2/2020	7/13/2020	5	30	
4	Building Construction	Building Construction	7/14/2020	11/16/2020	5	90	
5	Paving	Paving	7/14/2020	11/16/2020	5	90	
6	Architectural Coating	Architectural Coating	7/14/2020	11/16/2020	5	90	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 1.94

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 5,069 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Paving	Signal Boards	2	8.00	6	0.82

Paving	Skid Steer Loaders	2	8.00	65	0.37
Paving	Surfacing Equipment	1	8.00	263	0.30
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	6.00	130	0.42
Paving	Rollers	3	7.00	80	0.38
Grading	Crawler Tractors	2	8.00	212	0.43
Building Construction	Crawler Tractors	2	8.00	212	0.43
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	2	6.00	187	0.41
Paving	Paving Equipment	1	8.00	132	0.36
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Building Construction	Cranes	1	6.00	231	0.29
Demolition	Excavators	1	8.00	158	0.38
Demolition	Graders	1	8.00	187	0.41
Demolition	Scrapers	1	8.00	367	0.48
Demolition	Signal Boards	2	8.00	6	0.82
Grading	Off-Highway Tractors	1	8.00	124	0.44
Grading	Rollers	1	8.00	80	0.38
Grading	Scrapers	2	8.00	367	0.48
Grading	Signal Boards	2	8.00	6	0.82
Grading	Skid Steer Loaders	2	8.00	65	0.37
Grading	Trenchers	1	8.00	78	0.50
Building Construction	Excavators	2	8.00	158	0.38

Building Construction	Graders	2	8.00	187	0.41
Building Construction	Off-Highway Tractors	1	8.00	124	0.44
Building Construction	Pavers	1	8.00	130	0.42
Building Construction	Paving Equipment	1	8.00	132	0.36
Building Construction	Rollers	1	8.00	80	0.38
Building Construction	Rough Terrain Forklifts	1	8.00	100	0.40
Building Construction	Scrapers	2	8.00	367	0.48
Building Construction	Signal Boards	2	8.00	6	0.82
Building Construction	Skid Steer Loaders	2	8.00	65	0.37
Building Construction	Surfacing Equipment	1	8.00	263	0.30
Building Construction	Trenchers	1	8.00	78	0.50
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Welders	3	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	8	18.00	0.00	100.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	15	35.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	26	35.00	14.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	12	30.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	7.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.1006	0.0000	1.1006	0.1667	0.0000	0.1667			0.0000			0.0000
Off-Road	3.5403	37.9959	23.2887	0.0463		1.6939	1.6939		1.5765	1.5765		4,437.0527	4,437.0527	1.2592		4,468.5337
Total	**3.5403**	**37.9959**	**23.2887**	**0.0463**	**1.1006**	**1.6939**	**2.7945**	**0.1667**	**1.5765**	**1.7431**		**4,437.0527**	**4,437.0527**	**1.2592**		**4,468.5337**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0311	1.2317	0.1818	3.9200e-003	0.0875	3.6700e-003	0.0912	0.0240	3.5100e-003	0.0275		416.3540	416.3540	0.0225		416.9158
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	0.0799	0.0480	0.6166	1.5100e-003	0.1479	1.0000e-003	0.1489	0.0392	9.2000e-004	0.0401		150.5488	150.5488	4.6800e-003		150.6658
Total	**0.1110**	**1.2797**	**0.7984**	**5.4300e-003**	**0.2354**	**4.6700e-003**	**0.2400**	**0.0632**	**4.4300e-003**	**0.0676**		**566.9028**	**566.9028**	**0.0272**		**567.5815**

3.2 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.1006	0.0000	1.1006	0.1667	0.0000	0.1667			0.0000			0.0000
Off-Road	3.5403	37.9959	23.2887	0.0463		1.6939	1.6939		1.5765	1.5765	0.0000	4,437.0527	4,437.0527	1.2592		4,468.5337
Total	**3.5403**	**37.9959**	**23.2887**	**0.0463**	**1.1006**	**1.6939**	**2.7945**	**0.1667**	**1.5765**	**1.7431**	**0.0000**	**4,437.0527**	**4,437.0527**	**1.2592**		**4,468.5337**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0311	1.2317	0.1818	3.9200e-003	0.0875	3.6700e-003	0.0912	0.0240	3.5100e-003	0.0275		416.3540	416.3540	0.0225		416.9158
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	0.0799	0.0480	0.6166	1.5100e-003	0.1479	1.0000e-003	0.1489	0.0392	9.2000e-004	0.0401		150.5488	150.5488	4.6800e-003		150.6658
Total	**0.1110**	**1.2797**	**0.7984**	**5.4300e-003**	**0.2354**	**4.6700e-003**	**0.2400**	**0.0632**	**4.4300e-003**	**0.0676**		**566.9028**	**566.9028**	**0.0272**		**567.5815**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	1.6299	18.3464	7.7093	0.0172		0.8210	0.8210		0.7553	0.7553		1,667.4119	1,667.4119	0.5393		1,680.8937
Total	**1.6299**	**18.3464**	**7.7093**	**0.0172**	**5.7996**	**0.8210**	**6.6205**	**2.9537**	**0.7553**	**3.7090**		**1,667.4119**	**1,667.4119**	**0.5393**		**1,680.8937**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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	0.0355	0.0214	0.2741	6.7000e-004	0.0657	4.4000e-004	0.0662	0.0174	4.1000e-004	0.0178		66.9106	66.9106	2.0800e-003		66.9626
Total	**0.0355**	**0.0214**	**0.2741**	**6.7000e-004**	**0.0657**	**4.4000e-004**	**0.0662**	**0.0174**	**4.1000e-004**	**0.0178**		**66.9106**	**66.9106**	**2.0800e-003**		**66.9626**

3.3 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	1.6299	18.3464	7.7093	0.0172		0.8210	0.8210		0.7553	0.7553	0.0000	1,667.4119	1,667.4119	0.5393		1,680.8937
Total	**1.6299**	**18.3464**	**7.7093**	**0.0172**	**5.7996**	**0.8210**	**6.6205**	**2.9537**	**0.7553**	**3.7090**	**0.0000**	**1,667.4119**	**1,667.4119**	**0.5393**		**1,680.8937**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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	0.0355	0.0214	0.2741	6.7000e-004	0.0657	4.4000e-004	0.0662	0.0174	4.1000e-004	0.0178		66.9106	66.9106	2.0800e-003		66.9626
Total	**0.0355**	**0.0214**	**0.2741**	**6.7000e-004**	**0.0657**	**4.4000e-004**	**0.0662**	**0.0174**	**4.1000e-004**	**0.0178**		**66.9106**	**66.9106**	**2.0800e-003**		**66.9626**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5696	0.0000	4.5696	2.4884	0.0000	2.4884			0.0000			0.0000
Off-Road	6.0162	69.7632	38.7449	0.0813		2.9869	2.9869		2.7502	2.7502		7,840.0567	7,840.0567	2.5140		7,902.9061
Total	**6.0162**	**69.7632**	**38.7449**	**0.0813**	**4.5696**	**2.9869**	**7.5565**	**2.4884**	**2.7502**	**5.2386**		**7,840.0567**	**7,840.0567**	**2.5140**		**7,902.9061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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	0.1553	0.0934	1.1990	2.9400e-003	0.2875	1.9400e-003	0.2895	0.0763	1.7900e-003	0.0781		292.7337	292.7337	9.1000e-003		292.9612
Total	**0.1553**	**0.0934**	**1.1990**	**2.9400e-003**	**0.2875**	**1.9400e-003**	**0.2895**	**0.0763**	**1.7900e-003**	**0.0781**		**292.7337**	**292.7337**	**9.1000e-003**		**292.9612**

3.4 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5696	0.0000	4.5696	2.4884	0.0000	2.4884			0.0000			0.0000
Off-Road	6.0162	69.7632	38.7449	0.0813		2.9869	2.9869		2.7502	2.7502	0.0000	7,840.0567	7,840.0567	2.5140		7,902.9061
Total	**6.0162**	**69.7632**	**38.7449**	**0.0813**	**4.5696**	**2.9869**	**7.5565**	**2.4884**	**2.7502**	**5.2386**	**0.0000**	**7,840.0567**	**7,840.0567**	**2.5140**		**7,902.9061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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	0.1553	0.0934	1.1990	2.9400e-003	0.2875	1.9400e-003	0.2895	0.0763	1.7900e-003	0.0781		292.7337	292.7337	9.1000e-003		292.9612
Total	**0.1553**	**0.0934**	**1.1990**	**2.9400e-003**	**0.2875**	**1.9400e-003**	**0.2895**	**0.0763**	**1.7900e-003**	**0.0781**		**292.7337**	**292.7337**	**9.1000e-003**		**292.9612**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.5833	91.3824	63.6831	0.1268		3.9918	3.9918		3.7113	3.7113		12,114.4377	12,114.4377	3.6207		12,204.9544
Total	**8.5833**	**91.3824**	**63.6831**	**0.1268**		**3.9918**	**3.9918**		**3.7113**	**3.7113**		**12,114.4377**	**12,114.4377**	**3.6207**		**12,204.9544**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0437	1.5058	0.2946	3.9500e-003	0.0948	7.1700e-003	0.1020	0.0273	6.8600e-003	0.0342		416.6528	416.6528	0.0263		417.3098
Worker	0.1553	0.0934	1.1990	2.9400e-003	0.2875	1.9400e-003	0.2895	0.0763	1.7900e-003	0.0781		292.7337	292.7337	9.1000e-003		292.9612
Total	**0.1990**	**1.5992**	**1.4936**	**6.8900e-003**	**0.3824**	**9.1100e-003**	**0.3915**	**0.1036**	**8.6500e-003**	**0.1122**		**709.3865**	**709.3865**	**0.0354**		**710.2710**

3.5 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.5833	91.3824	63.6831	0.1268		3.9918	3.9918		3.7113	3.7113	0.0000	12,114.4377	12,114.4377	3.6207		12,204.9544
Total	**8.5833**	**91.3824**	**63.6831**	**0.1268**		**3.9918**	**3.9918**		**3.7113**	**3.7113**	**0.0000**	**12,114.4377**	**12,114.4377**	**3.6207**		**12,204.9544**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0437	1.5058	0.2946	3.9500e-003	0.0948	7.1700e-003	0.1020	0.0273	6.8600e-003	0.0342		416.6528	416.6528	0.0263		417.3098
Worker	0.1553	0.0934	1.1990	2.9400e-003	0.2875	1.9400e-003	0.2895	0.0763	1.7900e-003	0.0781		292.7337	292.7337	9.1000e-003		292.9612
Total	**0.1990**	**1.5992**	**1.4936**	**6.8900e-003**	**0.3824**	**9.1100e-003**	**0.3915**	**0.1036**	**8.6500e-003**	**0.1122**		**709.3865**	**709.3865**	**0.0354**		**710.2710**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6818	17.4982	17.2649	0.0305		0.9148	0.9148		0.8447	0.8447		2,898.4903	2,898.4903	0.9075		2,921.1765
Paving	0.0565					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7383**	**17.4982**	**17.2649**	**0.0305**		**0.9148**	**0.9148**		**0.8447**	**0.8447**		**2,898.4903**	**2,898.4903**	**0.9075**		**2,921.1765**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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	0.1332	0.0801	1.0277	2.5200e-003	0.2464	1.6700e-003	0.2481	0.0654	1.5400e-003	0.0669		250.9146	250.9146	7.8000e-003		251.1096
Total	**0.1332**	**0.0801**	**1.0277**	**2.5200e-003**	**0.2464**	**1.6700e-003**	**0.2481**	**0.0654**	**1.5400e-003**	**0.0669**		**250.9146**	**250.9146**	**7.8000e-003**		**251.1096**

3.6 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6818	17.4982	17.2649	0.0305		0.9148	0.9148		0.8447	0.8447	0.0000	2,898.4903	2,898.4903	0.9075		2,921.1765
Paving	0.0565					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7383**	**17.4982**	**17.2649**	**0.0305**		**0.9148**	**0.9148**		**0.8447**	**0.8447**	**0.0000**	**2,898.4903**	**2,898.4903**	**0.9075**		**2,921.1765**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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	0.1332	0.0801	1.0277	2.5200e-003	0.2464	1.6700e-003	0.2481	0.0654	1.5400e-003	0.0669		250.9146	250.9146	7.8000e-003		251.1096
Total	**0.1332**	**0.0801**	**1.0277**	**2.5200e-003**	**0.2464**	**1.6700e-003**	**0.2481**	**0.0654**	**1.5400e-003**	**0.0669**		**250.9146**	**250.9146**	**7.8000e-003**		**251.1096**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.6526					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**0.8948**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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	0.0311	0.0187	0.2398	5.9000e-004	0.0575	3.9000e-004	0.0579	0.0153	3.6000e-004	0.0156		58.5467	58.5467	1.8200e-003		58.5922
Total	**0.0311**	**0.0187**	**0.2398**	**5.9000e-004**	**0.0575**	**3.9000e-004**	**0.0579**	**0.0153**	**3.6000e-004**	**0.0156**		**58.5467**	**58.5467**	**1.8200e-003**		**58.5922**

3.7 Architectural Coating - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.6526					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**0.8948**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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	0.0311	0.0187	0.2398	5.9000e-004	0.0575	3.9000e-004	0.0579	0.0153	3.6000e-004	0.0156		58.5467	58.5467	1.8200e-003		58.5922
Total	**0.0311**	**0.0187**	**0.2398**	**5.9000e-004**	**0.0575**	**3.9000e-004**	**0.0579**	**0.0153**	**3.6000e-004**	**0.0156**		**58.5467**	**58.5467**	**1.8200e-003**		**58.5922**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

	Average Daily Trip 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 Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	9.50	7.30	7.30	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	0.549952	0.037123	0.179649	0.119457	0.017229	0.005267	0.017877	0.062669	0.001348	0.001607	0.006000	0.000812	0.001010

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
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

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
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	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0468	8.0000e-005	8.6600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0185	0.0185	5.0000e-005		0.0197
Unmitigated	0.0468	8.0000e-005	8.6600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0185	0.0185	5.0000e-005		0.0197

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0161					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0299					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.1000e-004	8.0000e-005	8.6600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0185	0.0185	5.0000e-005		0.0197
Total	**0.0468**	**8.0000e-005**	**8.6600e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0185**	**0.0185**	**5.0000e-005**		**0.0197**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0161					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0299					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.1000e-004	8.0000e-005	8.6600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0185	0.0185	5.0000e-005		0.0197
Total	**0.0468**	**8.0000e-005**	**8.6600e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0185**	**0.0185**	**5.0000e-005**		**0.0197**

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B – Biological Technical Report

Biological Technical Report

Sunburst Avenue Bike Trail

San Bernardino County, California

Prepared For:

County of San Bernardino Department of Public Works
Environmental Management Division
825 E. Third St., Room 123
San Bernardino, California 92415-0835

Prepared By:

ECORP Consulting, Inc.
215 North 5th Street
Redlands, California 92374

June 2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

ECORP Consulting, Inc. has assisted public and private land owners with environmental regulation compliance since 1987. We offer full service capability, from initial baseline environmental studies through environmental planning review, permitting negotiation, liaison to obtain legal agreements, mitigation design, and construction monitoring and reporting.

Citation: ECORP Consulting, Inc. 2019. Biological Technical Report for the Sunburst Avenue Bike Trail Project, City of Joshua Tree. San Bernardino County, California. Prepared for County of San Bernardino Department of Public Works.

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1.0 INTRODUCTION

ECORP Consulting, Inc. (ECORP) conducted a biological reconnaissance survey for the proposed Sunburst Avenue Bike Trail Project site (Project). The Project site consists of a two-mile portion of Sunburst Avenue between Twentynine Palms Highway (State Highway 62), and Calle Los Amigos in the community of Joshua Tree, San Bernardino County, California. The survey of the Project site was conducted to identify biological resources that could be affected by the proposed Project, pursuant to the terms of the California Environmental Quality Act (CEQA) and for the purposes of identifying any biological constraints that would affect the site plan for the Project. The Project will be subject to county, state, and federal regulations regarding compliance with the federal Endangered Species Act (ESA), California ESA, Migratory Bird Treaty Act (MBTA), and California Fish and Game Code.

1.1 Location and Setting

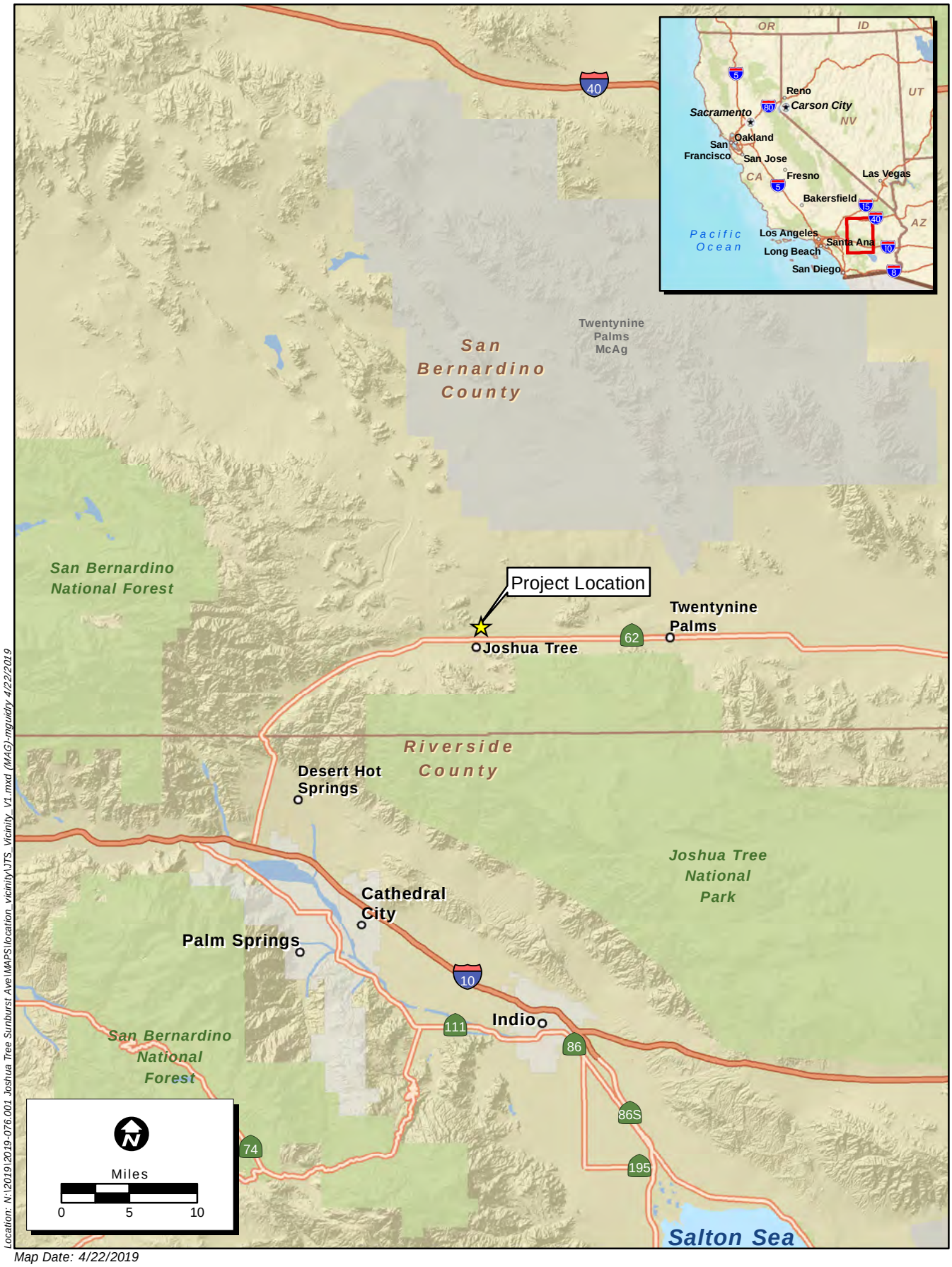
The Project site is located along the eastern and western portions of Sunburst Avenue in the community of Joshua Tree, San Bernardino County, California (Figure 1). The Project site is bounded by Calle Los Amigos to the north; residences, Sportsman's Park, and undeveloped parcels to the east; State Highway 62 to the south; and residences, Joshua Tree Elementary School, undeveloped parcels, and the Bartlett Mountains to the west. The Project site is located entirely within the existing right-of-way of Sunburst Avenue. The Project site, as depicted on the United States Geological Survey (USGS) 7.5-minute Joshua Tree North topographic quadrangle, runs north and south along the center of both Section 24 of Township 1 North, Range 6 East and Section 25 of Township 1 North, Range 6 East, San Bernardino Baseline and Meridian (Figure 2). The elevation of the Project site is approximately 2,750 feet above mean sea level.

1.2 Project Description and Purpose

The County of San Bernardino (County) proposes to rehabilitate and extend an existing bike lane along the eastern edge of Sunburst Avenue and create a new bike lane along the western edge between the intersection of State Route 62 and Calle Los Amigos. The western bike trail includes a 4- to 5-foot concrete paved trail running along the entire 2-mile stretch, while the eastern portion is separated into two segments. The first segment occurs between State Route 62 and South Oleander Drive and includes rehabilitation of an existing bike lane. This portion will include a 6.5-foot shoulder between the road and the trail, an 8-foot paved concrete bike trail, and a two-foot shoulder along the eastern edge of the bike trail. The second portion occurs between South Oleander Drive and Calle Los Amigos, including a 4- to 5-foot bike trail adjacent to the road and a 2-foot shoulder along the eastern edge of the new bike trail. The bikeways will enhance access to recreational opportunities in the region by: (a) providing neighborhood links to green space and natural areas, and (b) providing connections with city urban trails that provide safe travel to parks, community recreation facilities, and tourist attractions.

2.0 SPECIAL-STATUS SPECIES REGULATIONS

This biological reconnaissance survey was conducted to identify potential issues and ensure compliance with state and federal regulations regarding listed, protected, and sensitive species. The regulations are detailed below.



Location: N:\2019\2019-076.001 Joshua Tree Sunburst Ave\MAPS\location_vicinity\JTS_Vicinity_V1.mxd (MAG)-mguidry 4/22/2019

Map Date: 4/22/2019

Service Layer Credits: Sources: Esri, USGS, NOAA

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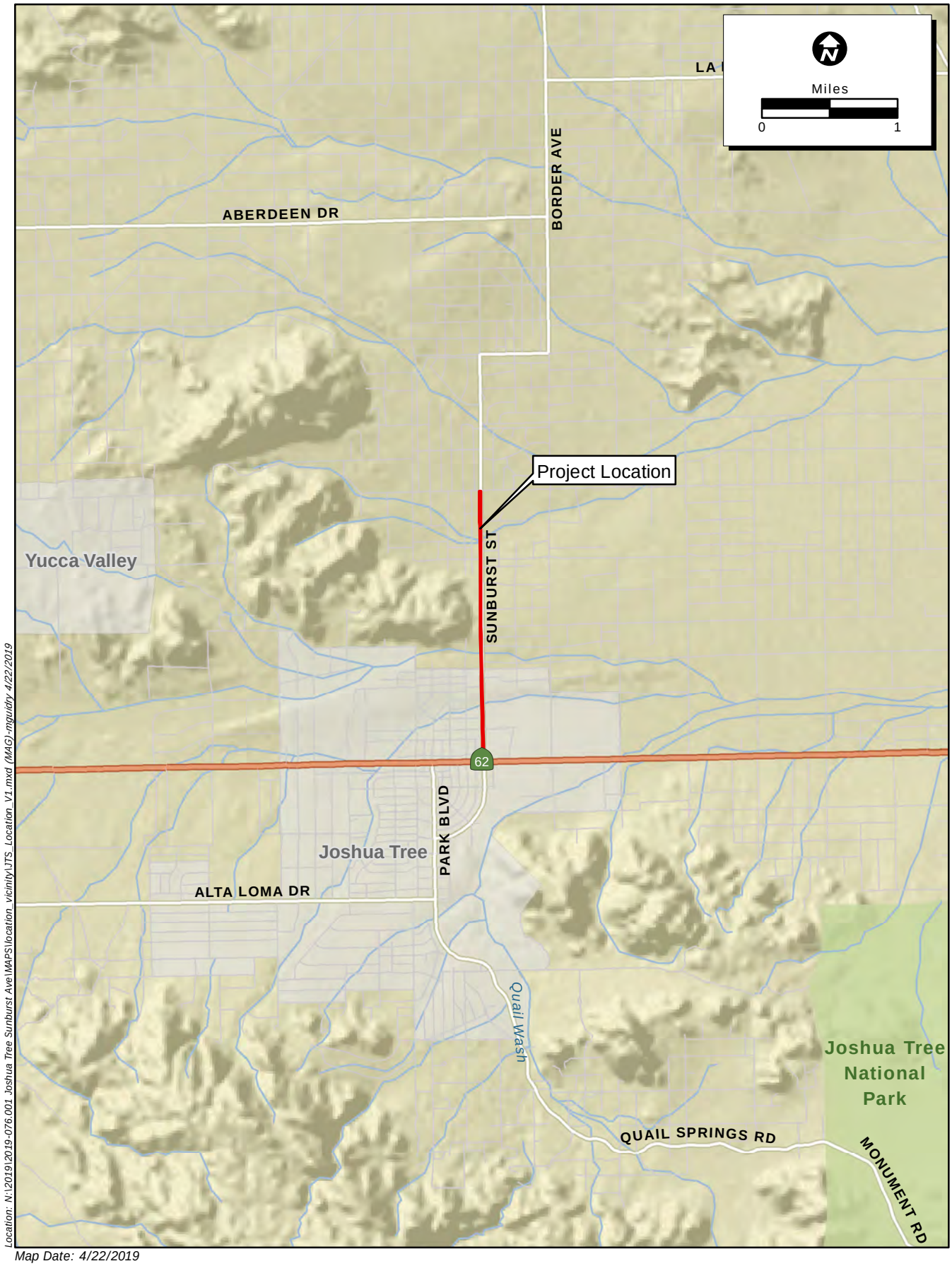
Figure 1. Project Vicinity

2019-076.001 Joshua Tree Sunburst Ave



Location: N:\2019\2019-076.001 Joshua Tree Sunburst Ave\MAPS\location_vicinity\JTS_Location_V1.mxd (MAG)-mguidry 4/22/2019

Map Date: 4/22/2019
Source: ESRI

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Figure 2. Project Location

2019-076.001 Joshua Tree Sunburst Ave

2.1 Federal Regulations

2.1.1 The Federal Endangered Species Act

The federal Endangered Species Act (ESA) protects plants and animals that are listed as endangered or threatened by the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service. Section 9 of the ESA prohibits the taking of endangered wildlife, where taking is defined as "*harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct*" (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any endangered plant on federal land and removing, cutting, digging up, damaging, or destroying any endangered plant on non-federal land in knowing violation of state law (16 U.S. Code 1538). Under Section 7 of the ESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect a listed (or proposed) species (including plants) or its critical habitat. Through consultation and the issuance of a biological opinion, the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity provided the activity will not jeopardize the continued existence of the species. Section 10 of the ESA provides for issuance of incidental take permits where no other federal actions are necessary provided a habitat conservation plan (HCP) is developed.

2.1.2 Migratory Bird Treaty Act

The MBTA implements international treaties between the United States and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities including hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR Part 13 General Permit Procedures and 50 CFR Part 21 Migratory Bird Permits. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the California Fish and Game Code.

2.2 State and Local Regulations

2.2.1 California Endangered Species Act

The California ESA generally parallels the main provisions of the ESA but, unlike its federal counterpart, the California ESA applies the take prohibitions to species proposed for listing (called "candidates" by the state). Section 2080 of the California Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. Take is defined in Section 86 of the California Fish and Game Code as "*hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill*." The California ESA allows for take incidental to otherwise lawful development projects. State lead agencies are required to consult with California Department of Fish and Wildlife (CDFW) to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat.

2.2.2 Fully Protected Species

The State of California first began to designate species as "fully protected" prior to the creation of the federal and California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction, and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under federal and/or California ESAs. The regulations that implement the Fully Protected Species Statute (California Fish and Game Code § 4700) provide that fully protected species may not be taken or possessed at any time. Furthermore, CDFW prohibits any state agency from issuing incidental take permits for fully protected species, except for necessary scientific research.

2.2.3 Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 (California Fish and Game Code §§ 1900-1913) was created with the intent to "*preserve, protect and enhance rare and endangered plants in this State*." The NPPA is administered by CDFW. The Fish and Wildlife Commission has the authority to designate native plants as "endangered" or "rare" and to protect endangered and rare plants from take. The California ESA of 1984 (California Fish and Game Code § 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the California Fish and Game Code.

2.2.4 California Fish and Game Code

Streambed Alteration Agreement

Section 1602 of the California Fish and Game Code requires that a Notification of Lake or Streambed Alteration be submitted to CDFW for "*any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake*." The CDFW reviews the proposed actions and, if necessary, submits to the Applicant a proposal for measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the Applicant is the Streambed Alteration Agreement (SAA). Often, projects that require an SAA also require a permit from the USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the SAA may overlap.

Migratory Birds

The CDFW enforces the protection of nongame native birds in §§ 3503, 3503.5, and 3800 of the California Fish and Game Code. Section 3513 of the California Fish and Game Code prohibits the possession or take of birds listed under the MBTA. These sections mandate the protection of California nongame native birds' nests and also make it unlawful to take these birds. All raptor species are protected from "take" pursuant to California Fish and Game Code § 3503.5 and are also protected at the federal level by the MBTA of 1918.

2.2.5 CEQA Significance Criteria

Section 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines. Appendix G provides examples of impacts that

would normally be considered significant. Based on these examples, impacts to biological resources would normally be considered significant if the project would:

- 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 CDFW or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS;
- have a substantial adverse effect on state or federally protected wetlands or waters (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means;
- 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;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and
- conflict with the provisions of an adopted HCP, Natural Community Conservation Plan (NCCP), or other approved local, regional or state HCP.

An evaluation of whether an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant according to CEQA. The reason for this is that although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish, or result in the permanent loss of an important resource on a population-wide or region-wide basis.

3.0 METHODS

3.1 Literature Review

Prior to conducting the biological reconnaissance survey, ECORP biologists performed a literature review using the CDFW's California Natural Diversity Database (CNDDB; CDFW 2019a) and the California Native Plant Society's (CNPS) Electronic Inventory (CNPSEI; CNPS 2019) to determine the special-status plant and wildlife species that have been documented near the Project site. The CNDDB and CNPSEI database searches were conducted on July 24, 2018. ECORP searched CNDDB and CNPSEI records within the Project site boundaries as depicted on USGS 7.5-minute Joshua Tree North topographic quadrangle, plus the surrounding eight topographic quadrangles, including Deadman Lake SW, Goat Mountain, Sunfair, Indian Cove, Joshua Tree South, Landers, Yucca Valley North, and Yucca Valley South. The CNDDB and CNPSEI contain records of reported occurrences of federally or state-listed endangered, threatened, proposed endangered or threatened species, California Species of Special Concern (SSC), and/or other

special-status species or habitat that may occur within or near the Project. Additional information was gathered from the following sources and includes, but is not limited to:

- Natural Resources Conservation Service *Web Soil Survey* (NRCS 2019);
- *State and Federally Listed Endangered and Threatened Animals of California* (CDFW 2019b);
- *Special Animals List* (CDFW 2019c);
- *The Jepson Manual* (Hickman 1993);
- *The Manual of California Vegetation*, 2nd Edition (Sawyer et al. 2009); and
- various online websites (e.g., Calflora 2019).

Using this information and observations in the field, a list of special-status plant and animal species that have potential to occur on or near the Project site was generated. For the purposes of this assessment, special-status species are defined as plants or animals that:

- have been designated as either rare, threatened, or endangered by CDFW, CNPS, or the USFWS, and/or are protected under either the federal or California ESAs;
- are candidate species being considered or proposed for listing under these same acts;
- are fully protected by the California Fish and Game Code, §§ 3511, 4700, 5050, or 5515; and/or
- are of expressed concern to resource and regulatory agencies or local jurisdictions.

Special-status species reported for the region in the literature review or for which suitable habitat occurs on the site were assessed for their potential to occur within the Project site based on the following guidelines:

Present: The species was observed on site during a site visit or focused survey.

High: Habitat (including soils and elevation factors) for the species occurs on site and a known occurrence has been recorded within five miles of the site.

Moderate: Either habitat (including soils and elevation factors) for the species occurs on site and a known occurrence has been reported in the database, but not within five miles of the site, or a known occurrence occurs within five miles of the site and marginal or limited amounts of habitat occurs on site.

Low: Limited habitat for the species occurs on site and a known occurrence has been reported in the database, but not within five miles of the site, or suitable habitat strongly associated with the species occurs on site, but no records were found in the database search.

Presumed Absent: Focused surveys were conducted, and the species was not found, or species was found in the database search but habitat (including soils and elevation factors) is not present on site, or the known geographic range of the species does not include the survey area.

Note that location information on some special-status species may be of questionable accuracy or unavailable. Therefore, for survey purposes, the environmental factors associated with a species' occurrence requirements may be considered sufficient reason to give a species a positive potential for

occurrence. In addition, just because a record of a species does not exist in the databases does not mean it does not occur. In many cases, records may not be present in the databases because an area has not been surveyed for that species.

A formal jurisdictional delineation was conducted for this project, results of which are detailed under a separate cover (ECORP 2019, in prep).

3.2 Field Survey

3.2.1 Biological Reconnaissance Survey

The biological reconnaissance survey was conducted by walking the entire Project site to determine the vegetation communities and wildlife habitats on the Project site. The biologist documented the plant and wildlife species present on the Project site, and the location and condition of the Project site were assessed for the potential to provide habitat for special-status plant and wildlife species. Data were recorded on a Global Positioning System (GPS) unit, field notebooks, and/or maps. Photographs were also taken during the survey to provide visual representation of the various vegetation communities within the Project site. The Project site was also examined to assess its potential to facilitate wildlife movement or function as a movement corridor for wildlife moving throughout the region. In addition, the biologist noted the vegetation communities present on the Project site.

Plant and wildlife species, including any special-status species that were observed during the survey, were recorded. Plant nomenclature follows that of *The Jepson Manual: Vascular Plants of California* (Baldwin et al. 2012). Wildlife nomenclature follows Society for the Study of Amphibians and Reptiles (SSAR; SSAR 2018), *Check-list of North American Birds* (American Ornithologist's Union [AOU] 2016), and the *Revised Checklist of North American Mammals North of Mexico* (Bradley et al. 2014).

4.0 RESULTS

Summarized below are the results of the literature review and field surveys, including site characteristics, vegetation communities, wildlife, special-status species, and special-status habitats (including any potential wildlife corridors).

4.1 Literature Review

The literature review and database searches resulted in records for five special-status plant species and four special-status wildlife species that could occur on and/or near the Project site.

4.1.1 Special-Status Plants and Wildlife

The literature review and database searched identified five special-status plant species and four special-status wildlife species that have been documented near the Project site. A list was generated from the results of the literature review and the Project site was evaluated for suitable habitat that could support any of the special-status plant or wildlife species on the list. Potential for special-status plant and wildlife species to occur on or near the Project site is discussed in more detail in Sections 4.2.5 and 4.2.6.

4.1.2 U.S. Fish and Wildlife Service Designated Critical Habitat

The Project site is not located within any USFWS-designated critical habitat. The closest designated critical habitat for desert tortoise (*Gopherus agassizii*) is the Pinto Mountains unit located approximately 16 miles southeast of the Project site.

4.2 Biological Reconnaissance Survey

The biological reconnaissance survey was conducted on May 3, 2019, by ECORP wildlife biologist Mandy Wegmann. Ms. Wegmann has more than five years of experience conducting surveys and habitat assessments for the special-status plant and wildlife species including desert tortoise and burrowing owl (*Athene cunicularia*). Summarized below are the results of the biological reconnaissance survey, including site characteristics, plant communities, wildlife, special-status species, and special-status habitats (including any potential wildlife corridors). Weather conditions during the survey are summarized in Table 1.

Table 1. Weather Conditions During the Survey

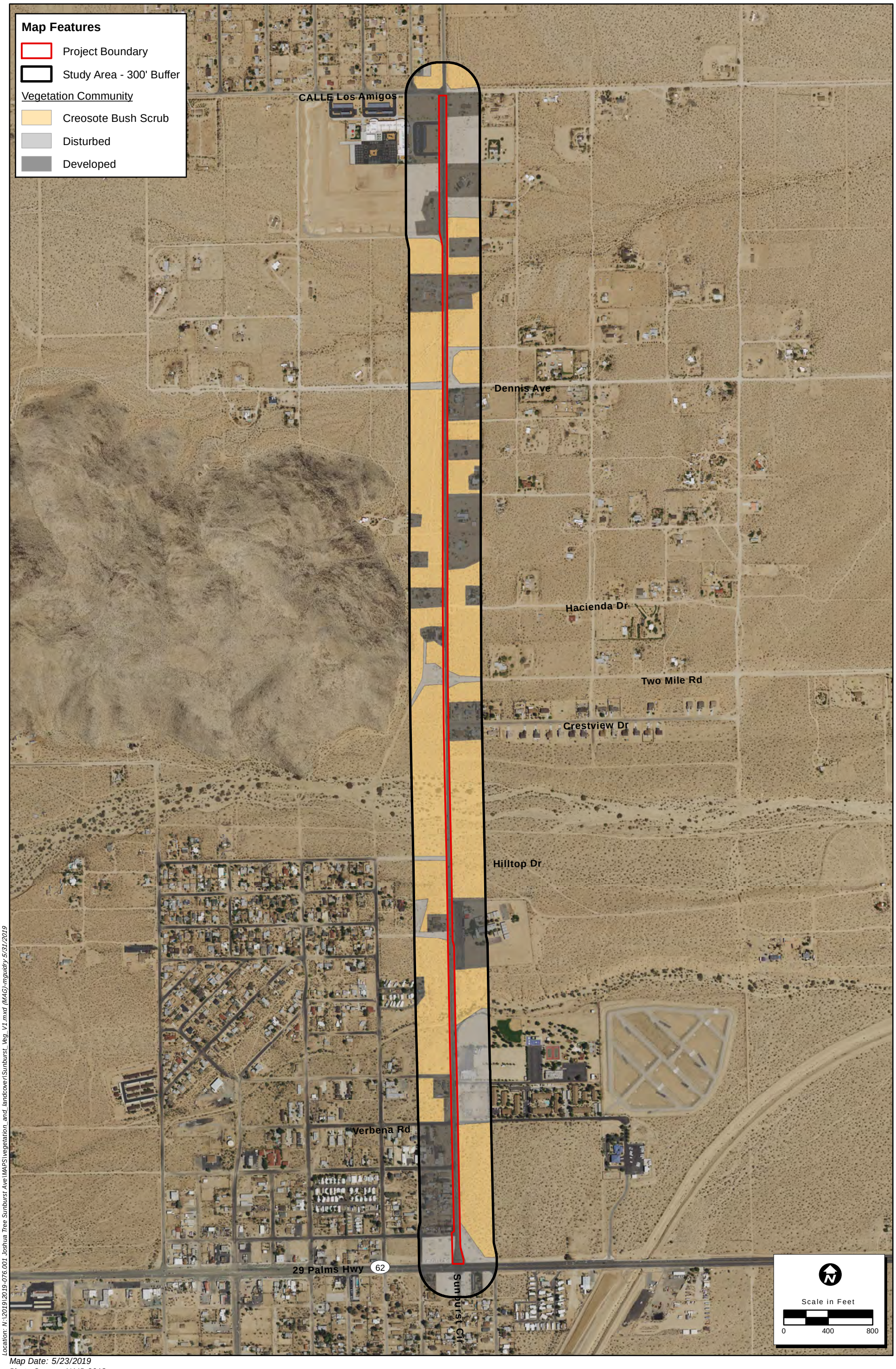
Date	Time		Temperature (˚F)		Cloud Cover (%)		Wind Speed (mph)	
	Start	end	Min	Max	min	max	min	max
5/3/19	1040	1230	79	84	50	60	5	5

4.2.1 Property Characteristics

The Project site consists of an existing paved roadway that has residential and commercial developments occurring along the boundaries of the roadway. Disturbed areas that contain little to no vegetation are interspersed throughout the boundaries of the Project site. Unauthorized trash dumping and OHV use are prevalent in the surrounding areas, degrading the quality of vegetation located in adjacent areas. The topography of the Project site is relatively flat; however, a small mountain range is located just west of the central portion of the Project site. Three drainages running in a west-east direction cross the Project site. No riparian habitat is associated with these drainages and no riparian habitat was identified within the Project site. Some willows were observed in a front yard of an adjacent residence, but these willows appeared to have been planted as ornamental plantings and did not comprise an area that would be classified as riparian habitat. Representative site photographs taken during the survey are included in Appendix A.

4.2.2 Vegetation Communities

Vegetation communities and other land cover types observed within and adjacent to the project were typical of those found in the Mojave Desert: disturbed lands, developed areas, and disturbed Mojave creosote bush scrub (Figure 3). The entire Project site was classified as either disturbed or developed. Disturbed Mojave creosote bush scrub was mapped in areas immediately adjacent to the Project site. Some portions of the project boundaries were disturbed from unauthorized trash dumping and off-highway vehicle (OHV) use. No special-status habitats or vegetation communities were observed within or adjacent to the Project boundaries. Descriptions of each vegetation community and land cover type that were mapped, as well as representative photos, are provided below.



Location: N:\2019\2019-076.001 Joshua Tree Sunburst Ave\MAPS\vegetation_and_landcover\Sunburst_Veg_V1.mxd (MAG)-mguidry 5/31/2019

Map Date: 5/23/2019
Photo Source: NAIP 2018

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Figure 3. Vegetation Communities

2019-076.001 Joshua Tree Sunburst Ave

Disturbed

The disturbed land classification includes areas where the native vegetation community has been heavily influenced by human actions, such as grading, trash dumping, and OHV use, but lack development. Disturbed land is not a vegetation classification, but rather a land cover type and is not restricted by elevation. Disturbed land is located within the project boundaries and includes areas adjacent to roads and along OHV trails. In areas classified as disturbed land, vegetation was absent or consisted primarily of non-native species, such as common Mediterranean grass (*Schismus barbatus*). An example of a disturbed area in the project boundaries is depicted in Figure 4.

Figure 4. Recently disturbed land with OHV use and sparse vegetation.

Developed

Areas designated as developed land have infrastructure present and any vegetation in the immediate surroundings is composed of ornamental landscaping or nonnative plant growth. Developed land is not a vegetation classification, but rather a land cover type and is not restricted by elevation. Developed areas were located within the project boundaries and included paved roads, residences, Joshua Tree Elementary School, and Sportsman's Park. Often these developed areas were located adjacent to disturbed lands.

Disturbed Mojave Creosote Bush Scrub

Mojave creosote bush scrub is a native desert scrub community that is common to the Mojave Desert and generally consists of relatively open stands of the dominant shrub, creosote bush. Typically, this community occurs in well-drained, sandy soils 246 feet below and 3,280 feet above mean sea level (msl). This community was not present within the Project boundaries but was mapped in areas immediately adjacent to the Project boundaries (see Figure 3). These areas exhibited high levels of disturbances, such

as unauthorized trash dumping and OHV use, which degraded the quality of the community. In the areas where this community was mapped, plant species associated with this vegetation community included creosote bush (*Larrea tridentata*), burrobush (*Ambrosia dumosa*), Joshua tree (*Yucca brevifolia*), and cholla (*Cylindropuntia* sp.) (Figure 5).

Figure 5. Disturbed Mojave creosote bush scrub adjacent to the Project boundaries.

4.2.3 Plants

The Project site, consisting of disturbed land and compacted soils, was mostly devoid of vegetation. The vegetation in undeveloped areas and on the land adjacent to the Project site consisted of a mixture of native and nonnative species, including creosote bush, tamarisk (*Tamarix* ssp.), willow (*Salix* ssp.), Joshua tree, cholla, and nonnative grasses (including *Schismus barbatus* and *Bromus* ssp.). A full list of plant species observed on or immediately adjacent to the Project site is included in Appendix B.

4.2.4 Wildlife

Due to its disturbed and developed nature, the Project site did not provide much habitat for wildlife species. Though, the Project site is adjacent to areas that may represent suitable habitat for many species, including nesting birds. Wildlife species that were observed during the survey included common raven (*Corvus corax*), house finch (*Haemorhous mexicanus*), California ground squirrel (*Otospermophilus beecheyi*), mourning dove (*Zenaida macroura*), desert cottontail (*Sylvilagus audubonii*), and desert iguana (*Dipsosaurus dorsalis*). A complete list of wildlife species observed on or immediately adjacent to the Project site is included in Appendix C.

4.2.5 Potential for Special-Status Plant and Wildlife Species to Occur on the Project Site

The literature review and database searches identified 16 special-status plant species and 19 special-status wildlife species that occur on near the Project site. However, due to the Project site's long history of being heavily disturbed and developed and the current lack of suitable habitat for the special-status plant and wildlife species, many of the species are presumed absent from the Project site.

Special-Status Plants

Although 16 special-status plant species appeared in the literature search, due to the Project site's current condition of being heavily disturbed and developed, the fact that the Project site was completely graded and/or paved with very compacted soils, and the current lack of suitable habitat for the special-status plant species identified in the literature review and database searches, all of the 16 species are presumed to be absent from the Project site. Descriptions of the CNPS designations are found in Table 2 and a list of the 16 special-status plant species identified in the literature review is presented below.

Table 2. CNPS Status Designations

List Designation	Meaning
1A	Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
1B	Plants Rare, Threatened, or Endangered in California and Elsewhere
2A	Plants Presumed Extirpated in California, But Common Elsewhere
2B	Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
3	Plants about which we need more information; a review list
4	Plants of limited distribution; a watch list
List 1B, 2, and 4 extension meanings:	
.1	Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2	Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

Note: According to CNPS (Skinner and Pavlik 1994), plants on Lists 1B and 2 meet definitions for listing as threatened or endangered under Section 1901, Chapter 10 of the California FGC (CDFW 1984). This interpretation is inconsistent with other definitions.

Plant Species Presumed Absent

The following species are presumed absent from the Project site due to the lack of suitable habitat, soil type, and/or elevation range at the Project site:

- San Bernardino milk-vetch (*Astragalus bernardinus*) CNPS 1B.2
- triple-ribbed milk-vetch (*Astragalus tricarinatus*) CNPS 1B.2
- Fremont barberry (*Berberis fremontii*) CNPS 2B.3
- pinyon rockcress (*Boechera dispar*) CNPS 2B.3
- alkali mariposa lily (*Calochortus striatus*) CNPS 1B.2
- purple-nerve cymopterus (*Cymopterus multinervatus*) CNPS 2B.2
- Parish's daisy (*Erigeron parishii*) CNPS 1B.1

- Parish's club-cholla (*Grusonia parishii*) CNPS 2B.2
- Rau's jaffueliobryum moss (*Jaffueliobryum raui*) CNPS 2B.3
- Pioneertown linanthus (*Linanthus bernardinus*) CNPS 1B.2
- Little San Bernardino Mtns. linanthus (*Linanthus maculatus* ssp. *maculatus*) CNPS 1B.2
- Spear-leaf matelea (Matelea parvifolia) CNPS 2B.3
- Robison's monardella (*Monardella robisonii*) CNPS 1B.3
- appressed muhly (*Muhlenbergia appressa*) CNPS 2B.2
- Latimer's woodland-gilia (*Saltugilia latimeri*) CNPS 1B.2
- Rusby's desert-mallow (*Sphaeralcea rusbyi* var. *eremicola*) CNPS 1B.2
- southern jewelflower (*Streptanthus campestris*) CNPS 1B.3
- jackass-clover (*Wislizenia refracta* ssp. *refracta*) CNPS 2B.2

Special-Status Wildlife

Although 19 special-status wildlife species appeared in the literature search, due to the Project site's current condition of being heavily disturbed and developed, the fact that the Project site was completely graded and/or paved with very compacted soils, and the current lack of suitable habitat for the special-status wildlife species identified in the literature review and database searches, all but three of the 19 species are presumed absent.

Wildlife Species with Low Potential to Occur

Three species were found to have a low potential to occur due to recently documented observations located less than five miles from the Project site. The Project site itself does not provide suitable habitat for any of these species due to the presence of disturbances and developed areas. However, these species do have potential to occur in the immediate vicinity of the Project site due to presence of low-quality suitable habitat in the form of disturbed Mojave creosote bush scrub. Furthermore, there is potential for these species to occur on or adjacent to the Project site due to their mobile nature.

- burrowing owl (*Athene cunicularia*), CDFW SSC. Multiple burrowing owls and active burrows were documented in 2005 less than one mile northwest of the Project site (Occurrences 965 through 968; CDFW 2019a). No suitable burrowing owl burrows were identified within or immediately adjacent to the Project boundaries, but the adjacent disturbed Mojave creosote bush scrub provides suitable habitat for this species.

- desert tortoise (*Gopherus agassizii*), federally-listed (threatened) and state-listed (threatened). In October 1991, densities of approximately 20 to 50 desert tortoises per square mile were estimated in the Project site and surrounding areas (Occurrence 22; CDFW 2019a). The nearest recent observation of desert tortoise was recorded in March 2008 where one adult male and one sub adult were documented approximately 1.75 miles west of the Project site (Occurrence 251; CDFW 2019a). The Project site does not provide suitable habitat for desert tortoise, but the adjacent disturbed Mojave creosote bush scrub provides low-quality suitable habitat for the species.

- Le Conte's thrasher (*Toxostoma lecontei*), CDFW SSC. Many observations of Le Conte's thrasher have been documented within five miles of the Project site, the nearest was documented in May 2010 and located within the Project boundaries near the intersection of Sunburst Avenue and

Shadow Mountain Avenue (Occurrence 248; CDFW 2019a). The Project site does not provide suitable habitat for Le Conte's thrasher, but the adjacent disturbed Mojave creosote bush scrub provides low-quality suitable habitat for the species.

Wildlife Species Presumed Absent

The following species are presumed absent from the project due to the lack of suitable habitat on the Project site:

- southern California legless lizard *(Anniella stebbinsi*) CDFW SSC
- pallid bat (*Antrozous pallidus*) CDFW SSC
- golden eagle (*Aquila chrysaetos*) CDFW SSC and CDFW Fully Protected
- pallid San Diego pocket mouse (*Chaetodipus fallax pallidus*) CDFW SSC
- red-diamond rattlesnake (*Crotalus ruber*) CDFW SSC
- western mastiff bat (*Eumops perotis californicus*) CDFW SSC
- western yellow bat (*Lasiurus xanthinus*) CDFW SSC
- pocketed free-tailed bat (*Nyctinomops femorosaccus*) CDFW SSC
- big free-tailed bat (*Nyctinomops macrotis*) CDFW SSC
- desert bighorn sheep (*Ovis canadensis nelson*) CDFW SSC and CDFW Fully Protected
- coast horned lizard (*Phrynosoma blainvillii*) CDFW SSC
- yellow warbler (*Setophaga petechia*) CDFW SSC
- American badger (*Taxidea taxus*) CDFW SSC
- Bendire's thrasher (*Toxostoma bendirei*) CDFW SSC
- Mojave fringe-toed lizard (*Uma scoparia*) CDFW SSC
- least Bell's vireo (*Vireo bellii pusillus*) Federally Endangered and State Endangered

4.2.6 Potentially Jurisdictional Drainages

The Project site crosses three washes. Features potentially jurisdictional to USACE, CDFW, and/or RWQCB were identified and mapped during a formal jurisdictional delineation and results are provided under a separate cover (ECORP 2019, in prep).

4.2.7 Raptors and Migratory Birds

Potential nesting habitat for migratory birds and raptors protected by the MBTA and the California Fish and Game Code was not present on the Project site, but vegetation and structures suitable for nesting birds (e.g., buildings, wooden electrical poles) were observed in the areas surrounding the Project site. Construction of the Project could indirectly affect nesting birds. Raptors typically breed between February and August, and songbirds and other passerines generally nest between March and August.

4.2.8 Wildlife Movement Corridors, Linkages, and Significant Ecological Areas

The concept of habitat corridors addresses the linkage between large blocks of habitat that allow the safe movement of mammals and other wildlife species from one habitat area to another. The definition of a corridor varies, but corridors may include such areas as greenbelts, refuge systems, underpasses, and biogeographic land bridges. In general, a corridor is described as a linear habitat, embedded in a dissimilar matrix, which connects two or more large blocks of habitat. Wildlife movement corridors are

critical for the survivorship of ecological systems for several reasons. Corridors can connect water, food, and cover sources, spatially linking these three resources with wildlife in different areas. In addition, wildlife movement between habitat areas provides for the potential of genetic exchange between wildlife species populations, thereby maintaining genetic variability and adaptability to maximize the success of wildlife responses to changing environmental conditions. This is especially critical for small populations subject to loss of variability from genetic drift and effects of inbreeding. The nature of corridor usage and wildlife movement patterns vary greatly among species.

The Project site was assessed for its ability to function as a wildlife corridor. The Project site was disturbed and located in an urban setting surrounded by residential developments as well as undeveloped parcels and naturally occurring washes. The Project site itself did not contain suitable vegetation or cover to support wildlife movement opportunities. The undeveloped parcels and washes could facilitate local wildlife movement; however, due to the developed and disturbed nature of the area and the presence of anthropogenic disturbances, the Project and surrounding areas do not serve as a wildlife movement corridor or linkage. The Project site is also not located adjacent to any such corridor or linkage.

5.0 IMPACT ANALYSIS

5.1 Special-Status Species

The Project site, consisting mainly of an existing paved road and disturbed shoulder areas, was flat with very compacted or paved soil and was almost completely devoid of vegetation. Minor amounts of trash, adjacent to the Project site and OHV use was prevalent in the area. Residential and commercial developments are located adjacent to the Project site.

The literature review identified 16 special-status plant species that could occur in the area of the Project site but, due to lack of suitable habitat, compacted soils, and the site's current condition of being heavily disturbed and developed, all of the special-status plant species identified in the literature review were presumed absent from the Project site. Construction of the Project will not contribute to the overall decline of any of the special-status plant species identified in the literature review and no impacts to special-status plant species are anticipated to result from this Project.

The literature review identified 19 special-status wildlife species that occur near the Project site, but due to the Project site's current condition of being heavily disturbed and developed, the fact that the Project site was completely graded and/or paved with very compacted soils, and the current lack of suitable habitat, all but three of the 19 special-status wildlife species identified in the literature review were presumed absent from the Project site. Construction of the Project will not contribute to the overall decline of any of the special-status wildlife species that have been presumed absent from the site, and no impacts to these species are anticipated to result from this Project.

Three special-status wildlife species were found to have a low potential to occur within the Project boundaries: burrowing owl, desert tortoise, and Le Conte's thrasher. The Project site does not provide suitable habitat for any of these three species. However, these species were all recently documented within one to two miles of the Project site and the disturbed Mojave creosote bush scrub in the immediately adjacent areas provides low-quality suitable habitat for these species. Furthermore, there is potential for these species to occur on or adjacent to the Project site due to their mobile nature (for example, a desert tortoise could occur on the Project site if it was trying to cross Sunburst Avenue from

one area of disturbed Mojave creosote bush scrub to another). If these species were to occur on or adjacent to the Project site, direct impacts in the form of mortality or injury could occur in the form of vehicle or equipment strike. Indirect impacts could occur in the form of increased human/vehicular activity, noise, ground vibration, and increased dust as a result of construction activities. Implementation of Mitigation Measures BIO-1 and BIO-2 would reduce these potential project-related impacts to a less than significant level.

Although no suitable habitat for nesting birds and raptors was identified on the Project site, the disturbed Mojave creosote bush scrub and structures immediately adjacent to the Project site (e.g., buildings, wooden electrical poles) could provide nesting habitat for songbirds protected by the MBTA and California Fish and Game Code, including burrowing owl and Le Conte's thrasher. If construction of the Project occurs during the bird breeding season (typically February 1 through August 31), ground-disturbing construction activities could indirectly affect birds protected by the MBTA and their nests increased human/vehicular activity, noise, ground vibration, and increased dust. Impacts to nesting birds would be less than significant with the implementation of Mitigation Measure BIO-3.

5.2 Sensitive Natural Communities

In general, the Project site consisted of disturbed and developed land that supported mostly nonnative grass and forb species. No riparian habitat was identified within the Project site. Although three drainages cross the Project site, there is no riparian habitat associated with these drainages. Some willows were observed in a front yard of an adjacent residence, but these willows appeared to have been planted as ornamental plantings and did not comprise an area that would be classified as riparian habitat. The Project site did not contain any riparian habitat or sensitive natural communities that would need to be preserved and no project-related impacts to these types of resources are anticipated with the development of the Project.

5.3 State- and/or Federally-Protected Wetlands and Waters

The Project crosses three washes. Impacts to state- and/or federally-protected wetlands and waters are discussed in the aquatic resources delineation report (ECORP 2019, in prep).

5.4 Wildlife Corridors and Nursery Sites

The Project site is located within and adjacent to areas containing existing disturbances (i.e., paved roads and residential and commercial developments). The Project site is heavily disturbed and/or developed and does not provide suitable habitat or cover that is conducive to the movement of wildlife. No migratory wildlife corridors or native wildlife nursery sites were identified within the Project site. Therefore, no impacts to wildlife corridors or nursery sites are expected to occur during the development of the Project site.

5.5 Habitat Conservation Plans and Natural Community Conservation Plans

The Project site is not located within a HCP or NCCP. Therefore, development of the Project site will not conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional or state HCP.

6.0 RECOMMENDATIONS

The following mitigation measures are recommended prior to project implementation:

BIO-1 – Pre-construction Survey for Burrowing Owl: A pre-construction survey for burrowing owl shall be conducted within Project site and adjacent areas prior to the start of construction. The survey shall follow the methods described in the CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). The pre-construction burrowing owl survey shall be conducted between 30 and 14 days prior to initial ground disturbance (grading, grubbing, and construction). If burrowing owls or their sign (e.g., burrows with whitewash, pellets, bones of prey items) are identified during the pre-construction survey, then a second pre-construction survey will be conducted no more than 24 hours prior to initial ground disturbance. If burrowing owls and/or suitable burrowing owl burrows with sign (e.g., whitewash, pellets, feathers, prey remains) are identified on the Project site during the survey(s) and impacts to those features are unavoidable, consultation with the CDFW shall be conducted and the methods described in the CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFW 2012) for avoidance and/or passive relocation shall be followed.

BIO-2: Pre-construction Survey for Desert Tortoise: A pre-construction survey for desert tortoise shall be conducted prior to the start of ground-disturbing activities in accordance with the protocol methods outlined in *Preparing for Any Action that May Occur within the Range of the Mojave Desert Tortoise* (USFWS 2018). If desert tortoises or desert tortoise sign (e.g., burrows, carcasses, scat) are observed on or immediately adjacent to the Project Site, then coordination with USFWS and CDFW will need to occur and avoidance or minimization measures, such as biological monitoring and no disturbance buffers around burrows, may need to be implemented. If project-related impacts to the desert tortoise are found to be unavoidable and significant following the pre-construction survey, then the necessary state and federal permits will need to be obtained from CDFW and USFWS prior to the start of project activities.

BIO-3 – Pre-construction Nesting Bird Survey: If construction or other project activities are scheduled to occur during the bird breeding season (typically February 1 through August 31 for raptors and March 15 through August 31 for the majority of migratory bird species), a pre-construction nesting bird survey shall be conducted by a qualified avian biologist to ensure that active bird nests, including those for the Le Conte's thrasher, will not be disturbed or destroyed. The survey shall be completed no more than three days prior to initial ground disturbance and may be combined with the second burrowing owl survey identified in Mitigation Measure BIO-1 if a second pre-construction burrowing owl survey is conducted on site. The nesting bird survey shall include the Project site and adjacent areas where project activities have the potential to affect active nests, either directly or indirectly due to construction activity or noise. If an active nest is identified, the biologist shall establish an appropriately-sized disturbance limit buffer around the nest using flagging or staking. Construction activities shall not occur within any disturbance limit buffer zones until the nest is deemed inactive by the qualified biologist.

7.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the Project applicant or the applicant's representative and that I have no financial interest in the Project.

SIGNED: DATE: June 4, 2019

Kristen Wasz
Senior Wildlife Biologist
ECORP Consulting, Inc.

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Appendix A – Representative Project Site Photographs

Appendix B – Plant Species List

Appendix C – Wildlife Species List

APPENDIX A

Representative Project Site Photographs

Photo 1: Intersection of Sunburst Ave. and Hwy 62 facing south.

Photo 2: Intersection of Sunburst Ave. and Hwy 62 facing east.

Photo 3: Intersection of Sunburst Ave. and Verbena Rd. facing north includes existing bike path.

Photo 4: Intersection of Sunburst Ave. and Verbena Rd. facing south.

Photo 5: Southern-most wash on Sunburst Ave. facing east.

Photo 6: Sunburst Ave. facing north.

Photo 7: Intersection of Sunburst Ave and Hilltop Dr. facing east including wash.

Photo 8: Intersection of Sunburst Ave. and Crestview Dr. facing east.

Photo 9: Sunburst Ave. facing west.

Photo 10: Intersection of Sunburst Ave. and Calle los Amigos facing west.

APPENDIX B

Plant Species Observed

SCIENTIFIC NAME	COMMON NAME
Ambrosia dumosa	burrobush
*Bromus ssp.**	brome grass
Cylindropuntia ssp.	cholla species
Larrea tridentata	creosote bush
Malacothrix glabrata	desert dandelion
Salix ssp.	willow species
*Schismus barbatus**	Mediterranean grass
Sphaeralcea ambigua	desert mallow
Tamarix ssp.	tamarisk
Yucca brevifolia	Joshua tree

*Nonnative species

Wildlife Species List

SCIENTIFIC NAME	COMMON NAME
Aspidoscelis tigris	western whiptail lizard
Callipepla californica	California quail
Corvus corax	common raven
Dipsosaurus dorsalis	desert iguana
Haemorhous mexicanus	house finch
Otospermophilus beecheyi	California ground squirrel
Sylvilagus audubonii	desert cottontail
Zenaida macroura	mourning dove

Appendix C – Aquatic Resources Delineation

Aquatic Resources Delineation

Sunburst Avenue Class I Bike Path and Class II Bike Lanes Project

San Bernardino County, California

Prepared For:

County of San Bernardino
Department of Public Works
825 E. Third Street
San Bernardino, CA 92415

June 20, 2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

ECORP Consulting, Inc. has assisted public and private land owners with environmental regulation compliance since 1987. We offer full service capability, from initial baseline environmental studies through environmental planning review, permitting negotiation, liaison to obtain legal agreements, mitigation design, and monitoring and compliance reporting.

Citation: ECORP Consulting, Inc. 2019. Aquatic Resources Delineation for Sunburst Avenue Class I Bike Path and Class II Bike Lanes Project. San Bernardino County, California. June 2019.

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Attachment C – Plant Species Observed Onsite
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LIST OF ACRONYMS AND ABBREVIATIONS

CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Register
CWA	Clean Water Act
CWR	Clean Water Rule
DA	Delineation Area
FAC	Facultative
FACW	Facultative Wetland
FEMA	Federal Emergency Management Agency
FR	Federal Register
HUC	Hydrologic Unit Code
NHD	National Hydrography Dataset
N/L	Not Listed
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate
OHWM	Ordinary high water mark
PJD	Preliminary Jurisdictional Determination
RAFSS	Riversidean Alluvial Fan Sage Scrub
RAFSS-I/M	Riversidean Alluvial Fan Sage Scrub-Intermediate/Mature Phase
RAFSS-P	Riversidean Alluvial Fan Sage Scrub-Pioneer Phase
SR-210	State Route 210
SWRCB	State Water Resources Control Board
TNW	Traditional Navigable Waters
UPL	Upland
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

On behalf of San Bernardino County Department of Public Works, ECORP Consulting, Inc. (ECORP) conducted an aquatic resources delineation for the Sunburst Avenue Class I Bike Path and Class II Bike Lanes Project (Project) located in the City of Joshua Tree, San Bernardino County, California. The Project is located along Sunburst Avenue along the road shoulder, south of Calle Los Amigos and north of State Highway 62 (SR-62) (Figure 1. *Location and Vicinity*). The Delineation Area (DA) includes the entire Project limits, along with a buffer of 50 feet from the limits. The DA corresponds to a portion of Section(s) 24 and 25, Township 1 North, and Range 6 East (San Bernardino Base and Meridian) of the "Joshua Tree North, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 2018). The approximate center of the DA is located at 34.19566° latitude and -116.308711° longitude within the Southern Mojave Watershed (Hydrologic Unit Code #18100100, Natural Resources Conservation Service [NRCS], USGS, and U.S. Environmental Protection Agency [USEPA] 2016).

This report describes aquatic resources identified within the DA that may be regulated by the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the federal Clean Water Act (CWA). The information presented in this report provides data required by the USACE Sacramento District's Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE 2016a). The aquatic resource boundaries depicted in this report represent a calculated estimation of the jurisdictional area within the DA and are subject to modification following the USACE verification process. The purpose of this report is to provide adequate information to USACE for the issuance of a Preliminary Jurisdictional Determination (PJD).

2.0 REGULATORY SETTING

2.1 Waters of the United States

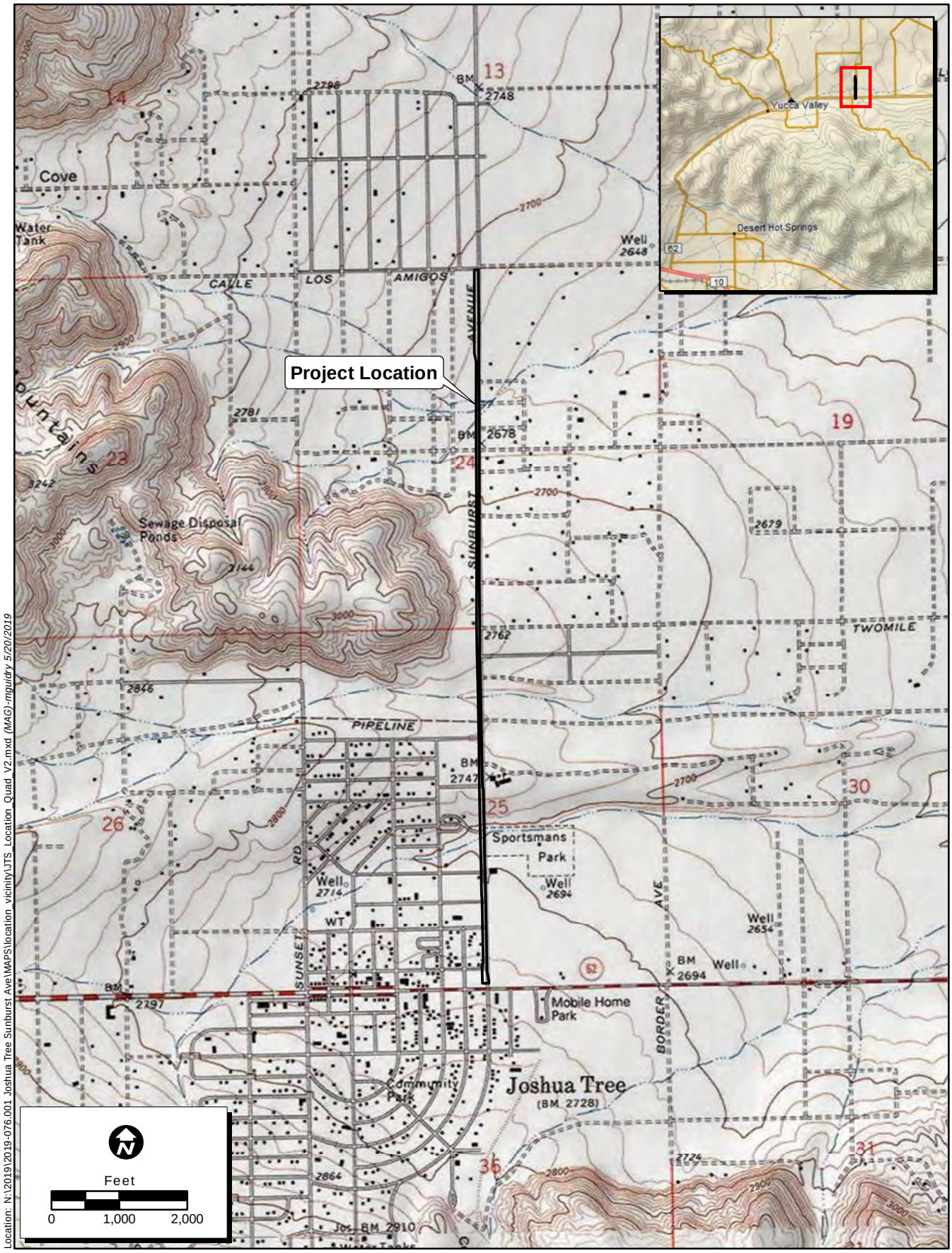
This report describes aquatic resources, including wetlands that may be regulated by USACE under Section 404 of the federal CWA. The following sections define these regulations.

2.1.1 Wetlands

Wetlands are "*those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions*" [51 Federal Register (FR) 41250, Nov. 13, 1986, as amended at 58 FR 45036, Aug. 25, 1993]. Wetlands can be perennial or intermittent.

2.1.2 Other Waters

Other waters are nontidal, perennial, and intermittent watercourses and tributaries to such watercourses [51 FR 41250, Nov. 13, 1986, as amended at 58 FR 45036, August 25, 1993]. The limit of USACE jurisdiction for nontidal watercourses (without adjacent wetlands) is defined in 33 Code of Federal Register (CFR) 328.4(c)(1) as the "ordinary high water mark" (OHWM). The OHWM is defined as the "line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" approximation of the lateral limit of USACE jurisdiction. The upstream limits of other waters are defined as the point where the OHWM is no longer perceptible.



Location: N:\2019\2019-076.001 Joshua Tree Sunburst Ave\MAPS\location_vicinity\JTS_Location_Quad_V2.mxd (MAG)-mguidry 5/20/2019

Map Date: 5/20/2019
USGS Topographic Quad: Joshua Tree North

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Figure 1. Project Location and Vicinity

2019-076.001 Joshua Tree Sunburst Ave

2.2 Clean Water Act

The USACE regulates discharge of dredged or fill material into Waters of the U.S. under Section 404 of the CWA. "Discharges of fill material" is defined as the addition of fill material into Waters of the U.S., including, but not limited to the following: placement of fill necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes, and subaqueous utility lines [33 CFR § 328.2(f)].

In addition, Section 401 of the CWA (33 U.S. Code 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into Waters of the U.S. to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards. The State Water Resources Control Board (SWRCB) may independently assert jurisdiction over isolated and other waters excluded from federal jurisdiction via California's Porter-Cologne Water Quality Act. Typically, jurisdiction under Porter-Cologne is asserted where "beneficial uses" are identified for the respective resource.

Substantial impacts to wetlands, over 0.5 acre of impact, may require an individual permit. Projects that only minimally affect wetlands, less than 0.5 acre of impact, may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued under the purview of the SWRCB, as administered by one of nine Regional Water Quality Control Boards.

2.3 Clean Water Rule

The Clean Water Rule (CWR) was published in June 2015, but implementation of the rule was stayed until September 2018. It is currently (2018) in effect for 22 States, including California, the District of Columbia, and the U.S. territories. The CWR establishes categories of waters that are jurisdictional, waters that are excluded, and waters that require a case-specific significant nexus evaluation to determine if they are Waters of the U.S. By rule, the CWR defines Waters of the U.S. to include Traditional Navigable Waters (TNW), interstate waters, and territorial seas, impoundments of jurisdictional waters, and tributaries and adjacent (i.e. bordering, contiguous, or neighboring) waters to TNW, interstate waters, or territorial seas (USACE and USEPA 2015).

According to the CWR, neighboring is defined as waters located: within 100 feet of the OHWM of a jurisdictional feature, within the 100-year floodplain of a jurisdictional feature and within 1,500 feet of the feature, or within 1,500 feet of the high tide line of TNW, interstate water, or territorial sea. Western vernal pools in California and several other location-specific aquatic feature types are evaluated on a case-by-case basis to determine whether they have a significant nexus to TNW, interstate waters, or territorial seas (USACE and USEPA 2015).

Feature types that are categorically excluded from CWA jurisdiction include waste treatment systems, prior converted cropland, ditches with intermittent or ephemeral flow that are not relocated tributaries or excavated in a tributary, ditches that do not flow, directly or indirectly, into a jurisdictional water, artificially irrigated areas that would revert to dry land in the absence of irrigation, artificial, constructed lakes or ponds created by excavating and/or diking dry land, small ornamental waters, artificial reflecting or swimming pools created by excavating and/or diking dry land, water-filled depressions created in dry land incidental to mining or construction activities, erosional features such as gullies, rills, and other

ephemeral features that do not meet the definition of tributary, non-wetland swales, and lawfully constructed grassed waterways, and puddles (USACE and USEPA 2015).

3.0 METHODS

This aquatic resources delineation was conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid West Region Supplement) (USACE 2008). The boundaries of aquatic resources were delineated through standard field methods (e.g., paired sample set analyses) and aerial photograph interpretation. Field data were recorded on Wetland Determination Data Forms - Arid West Region (Attachment B). A color aerial photograph (1"=400' scale, NAIP 2018) was used to assist with mapping and ground-truthing. *Munsell Soil Color Charts* (Kollmorgen Instruments Co. 1990) and the Web Soil Survey (NRCS 2019) were used to aid in identifying hydric soils in the field. The Jepson Manual, 2nd Edition (Baldwin et al. 2012) was used for plant nomenclature and identification.

Field surveys were conducted on June 10, 2019 by ECORP biologist Scott Taylor. Mr. Taylor walked and drove the entire DA to determine the location and extent of aquatic resources. Paired locations were sampled, if wetlands were suspected, to evaluate whether or not the vegetation, hydrology, and soils data supported an aquatic resource determination. At each paired location, one point was located such that it was within the estimated aquatic resource area, and the other point was situated outside the limits of the estimated aquatic resource area. Additional non-paired locations were sampled to document marginal areas that were determined not to be aquatic resources because they lacked hydrophytic vegetation, hydric soils, and/or wetland hydrology. Aquatic resources within the DA were recorded in the field using a post-processing capable global positioning system unit with sub-meter accuracy (Trimble GeoXT).

To document the locations of OHWM, Arid West Ephemeral and Intermittent Streams OHWM Datasheets were used. These forms document the resources used to make the determination of OHWM, a cross-sectional view of the stream in question, and field characteristics at the OHWM location.

3.1 Routine Determinations for Wetlands

To be determined a wetland, the following three criteria must be met:

- A majority of dominant vegetation species are wetland-associated species;
- Hydrologic conditions exist that result in periods of flooding, ponding, or saturation during the growing season; and
- Hydric soils are present.

3.1.1 Vegetation

Hydrophytic vegetation is defined as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanent or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present (Environmental Laboratory 1987). The definition of wetlands includes the phrase "*a prevalence of vegetation typically adapted for life in saturated soil conditions*." Prevalent vegetation is characterized by the dominant plant species comprising the plant community (Environmental Laboratory 1987). The dominance test is the basic hydrophytic vegetation indicator and was applied at each sampling point location. The "50/20 rule" was used to select the dominant plant species from each stratum of the community. The rule states that

for each stratum in the plant community, dominant species are the most abundant plant species (when ranked in descending order of coverage and cumulatively totaled) that immediately exceed 50 percent of the total coverage for the stratum, plus any additional species that individually comprise 20 percent or more of the total cover in the stratum (USACE 1992, USACE 2008).

Dominant plant species observed at each sampling point were then classified according to their indicator status (probability of occurrence in wetlands, Table 1), *North American Digital Flora: National Wetland Plant List* (Lichvar et al. 2016). If the majority (more than 50 percent) of the dominant vegetation on a site are classified as obligate (OBL), facultative wetland (FACW), or facultative (FAC), the site was considered to be dominated by hydrophytic vegetation.

Table 1. Classification of Wetland-Associated Plant Species

Plant Species Classification	Abbreviation[1]	Probability of Occurring in Wetland
Obligate	OBL	Almost always occur in wetlands
Facultative Wetland	FACW	Usually occur in wetlands, but may occur in non-wetlands
Facultative	FAC	Occur in wetlands and non-wetlands
Facultative Upland	FACU	Usually occur in non-wetlands, but may occur in wetlands
Upland	UPL	Almost never occur in wetlands
Plants That Are Not Listed (assumed upland species)	N/L	Does not occur in wetlands in any region.

[1]Source: Lichvar et al. 2016

In instances where indicators of hydric soil and wetland hydrology were present, but the plant community failed the dominance test, the vegetation was re-evaluated using the Prevalence Index. The Prevalence Index is a weighted-average wetland indicator status of all plant species in the sampling plot, where each indicator status category is given a numeric code (OBL=1, FACW=2, FAC=3, FACU=4, and UPL=5) and weighting is by abundance (percent cover). If the plant community failed the Prevalence Index, the presence/absence of plant morphological adaptations to prolonged inundation or saturation in the root zone was evaluated.

3.1.2 Soils

A hydric soil is defined as a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (NRCS 2003). Indicators that a hydric soil is present include, but are not limited to, histosols, histic epipedon, hydrogen sulfide, depleted below dark surface, sandy redox, loamy gleyed matrix, depleted matrix, redox dark surface, redox depressions, and vernal pools.

At each sampling point a soil pit was excavated to the depth needed to document an indicator, to confirm the absence of indicators, or until refusal at each sampling point. The soil was then examined for hydric soil indicators. Soil colors were determined while the soil was moist using the *Munsell Soil Color Charts* (Kollmorgen Instruments Co. 1990). Hydric soils are formed predominantly by the accumulation or loss of iron, manganese, sulfur, or carbon compounds in a saturated and anaerobic environment. These processes and the features in the soil that develop can be identified by looking at the color and texture of the soils.

3.1.3 Hydrology

Wetlands, by definition, are seasonally or perennially inundated or saturated at or near (within 12 inches of) the soil surface. Primary indicators of wetland hydrology include, but are not limited to: visual observation of saturated soils, visual observation of inundation, surface soil cracks, inundation visible on aerial imagery, water-stained leaves, oxidized rhizospheres along living roots, aquatic invertebrates, water marks (secondary indicator in riverine environments), drift lines (secondary indicator in riverine environments), and sediment deposits (secondary indicator in riverine environments). The occurrence of one primary indicator is sufficient to conclude that wetland hydrology is present. If no primary indicators are observed, two or more secondary indicators are required to conclude wetland hydrology is present. Secondary indicators include, but are not limited to: drainage patterns, crayfish burrows, FAC-neutral test, and shallow aquitard.

3.2 SWRCB Jurisdiction

As mentioned above, the SWRCB does not publish a delineation method for identifying their jurisdictional limits, but in general their jurisdictional limits are identified. Section 401 identifies jurisdictional limits as any "surface water or groundwater, including saline waters, within the boundaries of the state." For the purposes of this delineation, the limits of SWRCB jurisdiction generally follow those of the USACE jurisdiction under Section 404. But based on the Porter-Cologne Water Quality Control Act where beneficial uses are designated or derived from areas outside of USACE jurisdiction additional areas, such as CDFW jurisdictional areas, may be mapped as well.

3.3 CDFW Jurisdiction

The delineation of CDFW jurisdiction follows the guidance and definitions contained within Section 1600 of the California Fish and Game Code, which connotes jurisdiction as a "river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit." Delineators also used *A Review of Stream Processes and Forms in Dryland Watersheds* (Vyverberg 2010), which is a science based technical reference on dryland stream forms and processes, and MESA – Mapping Episodic Stream Activity (Vyverberg and Brady 2013) to aid in determining the CDFW jurisdictional limits for the delineation. MESA is intended to assist in identification and mapping of episodic streams when water has perhaps been absent for several years.

Based the aforementioned guidance and experience, the limits of CDFW jurisdiction were mapped where there appeared to be regular surface flow that met a broad definition of stream or lake, based on physical and vegetative characteristics. CDFW jurisdiction may include jurisdictional habitat (riparian habitat), functionally related swales, first-order streams (Strahler 1952), single-thread channels, compound channels, braided channels, discontinuous and distributary channels, drainage networks, and floodplains. CDFW streambed widths were mapped to the nearest foot along each channel.

4.0 RESULTS

4.1 Existing Site Conditions

The DA is located at approximately 2,741 feet above mean sea level (AMSL) to 2,693 feet AMSL in the Mojave Desert Subregion of the Desert Floristic Province (Baldwin et. al. 2012). Several seasonal drainages cross the DA. Vegetation within the Project Area consists primarily of creosote, bursage, and Joshua tree. The channels crossing the DA correspond with historically recorded drainages from USGS topographic

mapping and National Wetland Inventory mapping. Where larger drainages cross Sunburst Avenue, there are low-flow crossings present along with some armoring to prevent roadway erosion. Many of the smaller drainage features do not cross Sunburst Avenue but only occur along the east side, collecting runoff mostly from along the road.

The DA consists of a developed roadway and dirt shoulder, along with a buffer of approximately 50 feet into the surrounding area. The road shoulder is compacted and a small berm is present along the edge of the shoulder. In some locations, dirt roads run parallel along Sunburst Avenue. Surrounding land uses are primarily undeveloped areas along with a few rural residential lots. Development is more prevalent in the southern portions of the DA, adjacent to SR-62.

The DA is composed of disturbed areas, developed areas, and disturbed Mojave creosote bush scrub. Some portions of the DA were disturbed from unauthorized trash dumping and off-highway vehicle (OHV) use. No special-status habitats or vegetation communities were observed within or adjacent to the DA. See the biological report for the Project for additional details.

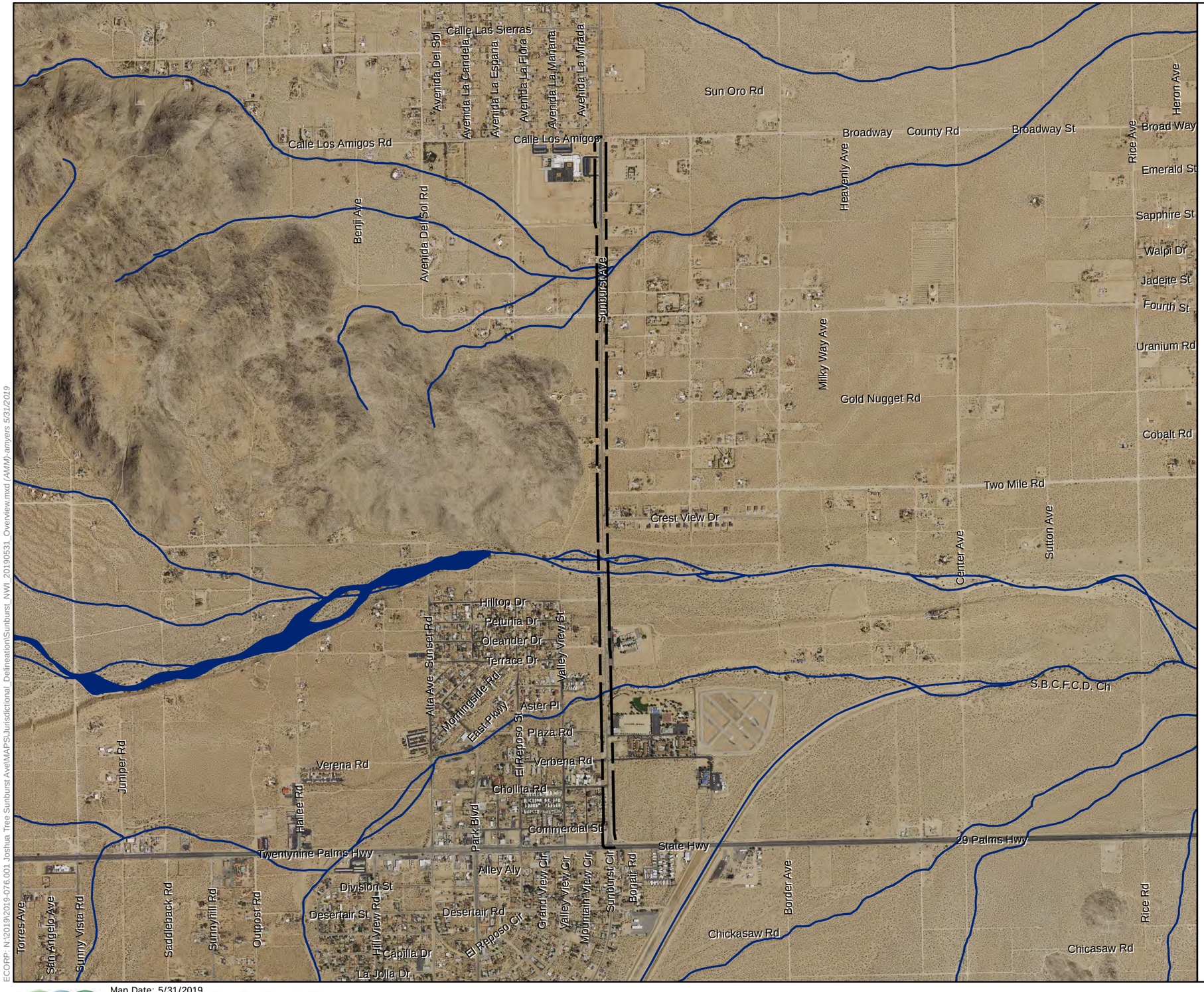
This aquatic resources delineation was conducted in the early summer, within the blooming season for some of the plant species. The survey was conducted at an acceptable time of the year to observe wetland hydrology, and although few wetland plant species would be expected to be in bloom at the time of the survey, most wetland plants were expected to be identifiable to species based upon vegetative characteristics. Temperatures during the survey were 95˚F, consistent with the average summer high temperature of 94˚F.

The DA is primarily fed by precipitation events in the surrounding desert and mountains. Precipitation data examined for this delineation was derived from two weather stations near Joshua Tree (IDs: US1CASR0014 and USC00044405). During the 2018-2019 year prior to the field survey (March 2018 to March 2019), 7.1 inches of rain fell at higher elevations near Joshua Tree (3,500 feet amsl) while at lower elevations (2,500 feet amsl) the recorded precipitation was 3.89 inches (NOAA 2019). The DA is better reflected by the lower elevation station data. The largest precipitation events recorded were 2.34 inches (at 3,500 feet amsl) and 1.67 inches (at 2,500 feet amsl) (NOAA 2019).

4.1.1 National Wetlands Inventory

The National Wetland Inventory (NWI) is a publicly available national dataset that provides detailed information on the abundance, characteristics, and distribution of US wetlands (USFWS 2019). NWI includes aquatic resource features mapped using a variety of remote sensing and modeling techniques. As such, these aquatic features may or may not exist as represented. In addition, NWI data varies in detail, accuracy, and age, and is meant to be used as a tool to assist with an aquatic resource delineation but not to serve as the only source of information. Data contained within the NWI can be historical in nature at times, having been modified by recent development or by other factors.

According to the NWI, there are aquatic features mapped within the DA (Figure 3. *National Wetlands Inventory*), crossing Sunburst Avenue at various locations. The locations of the mapped features correspond well with the findings of this delineation. Features mapped are classified as either R4SBJ or R4SBC (USFWS 2009). Both classifications represent Riverine (R), Intermittent (4), and Streambed (UB), but differ in predicted flood regime. The classification of "J" indicates Intermittently Flooded while the classification of "C" indicates Seasonally Flooded. Thus both classifications are similar but one is more likely to convey water each year. More detail regarding these classifications will be described below in the Results section.



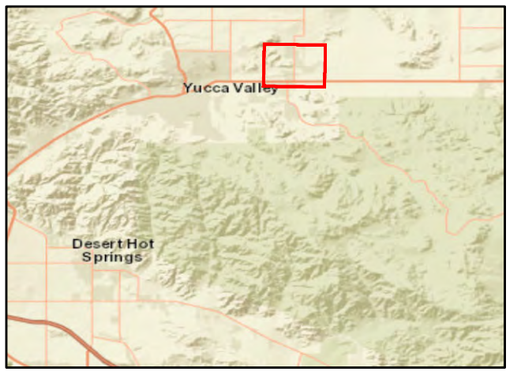
Map Features

Study Area

NWI Type

Riverine

Sources: NAIP 2018, NWI California (20180904)



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Map Date: 5/31/2019

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Scale in Feet
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Figure 2. National Wetland Invetory

2019-076.001 Joshua Tree Sunburst Ave

4.1.2 Watersheds

All of the DA is located within the Southern Mojave Watershed (Hydrologic Unit Code [HUC] 18100100) and within portions of two subwatersheds: Joshua Cove-Coyote Lake (HUC 181001001702) and Town of Joshua Tree (HUC 181001001603). The DA traverses the lower elevation, easternmost part of the Joshua Cove-Coyote Lake Subwatershed and the upper elevation, easternmost portions of the Town of Joshua Tree Subwatershed (Figure 3. *HUC12 Watersheds*). The direction of water flow is west to east through the DA.

The Southern Mojave Watershed encompasses over 5,000,000 acres spanning desert parts of San Bernardino, and Riverside Counties. The upper portions of the watershed are near the Lucerne Valley while the lower elevations are near the Chuckwalla Mountains and near Blythe. Larger named streamcourses are generally absent from much of the watershed, favoring instead many smaller drainage courses that collect local runoff from singular isolated mountain ranges and direct them towards various playas.

Current features within the DA consist mainly of several flat-bottomed channels of varying widths with sloped sides consisting of a mixture of natural slopes and riprap protection near Sunburst Avenue. Flows into the various features originate east of the DA for the larger features and from the paved portions of Sunburst Avenue for the smaller features.

4.1.3 Soils

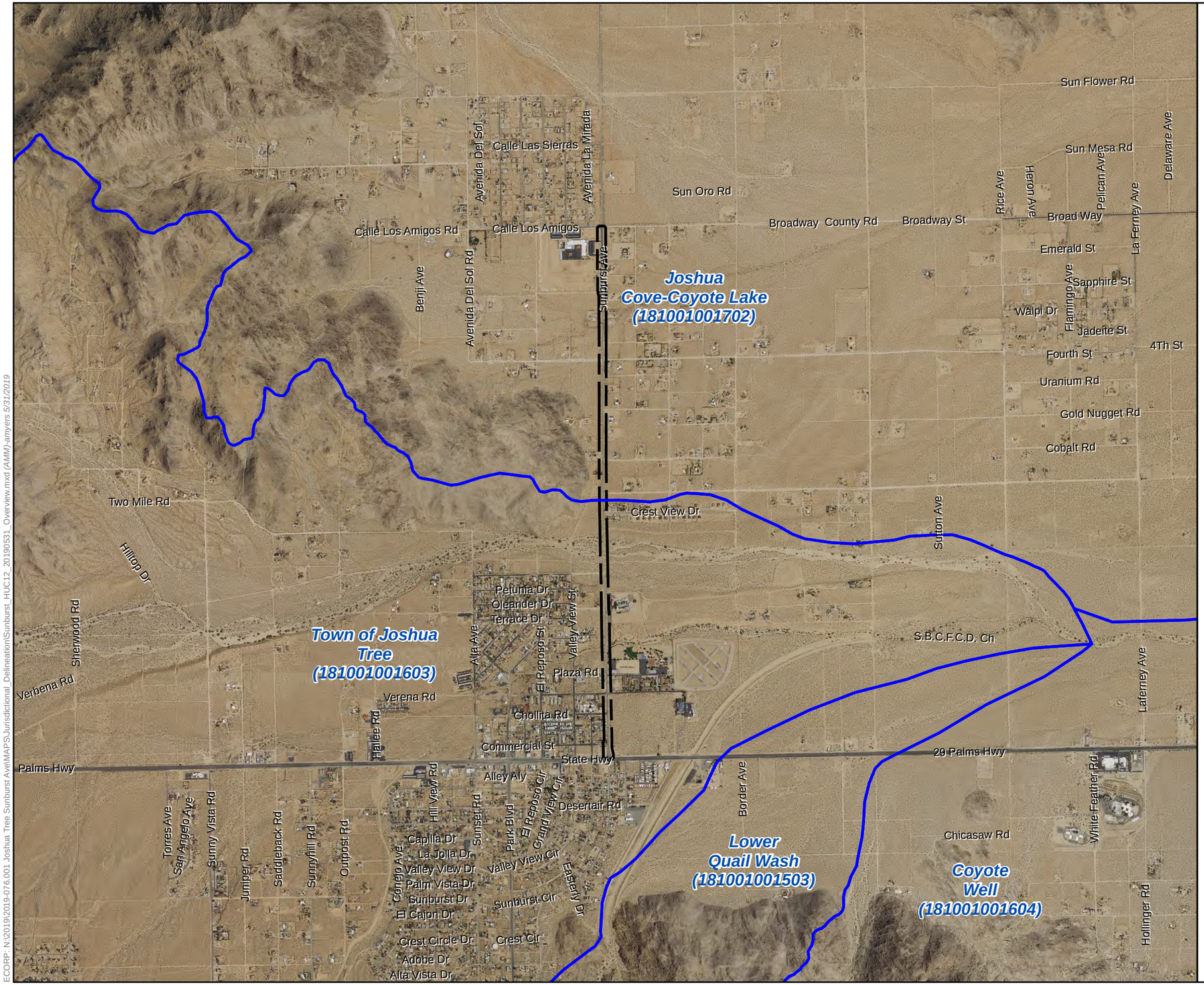
Soils in the area are derived from Pleistocene and Recent Quaternary alluvial sediments and Pleistocene older alluvial sediments, composed of sedimentary and volcanic rocks (Dibblee 1967). Soils within the DA are highly disturbed due to road construction and road shoulder maintenance, along with residential influences.

According to the Web Soil Survey (NRCS 2019a), soil data is lacking within this particular area (Figure 4). Field observations of the soils within the various features connoted a heavy presence of sands, with some smaller elements of silt. Generally larger materials such as cobbles or gravel were absent.

4.2 Aquatic Resources

A total of 1.41 acres of aquatic resources with none of the areas considered to be potentially jurisdictional to the USACE due to a lack of connection to Interstate Waters. All mapped features are considered to be state-only jurisdiction. The mapped features include two large streambeds (Streambed 1 and Streambed 2) as well as six smaller features (Drainages 1 through 6). Most of the features are located within the 50-foot buffer of the DA but appear to be outside of the area of direct Project impacts. These features are discussed in greater detail below.

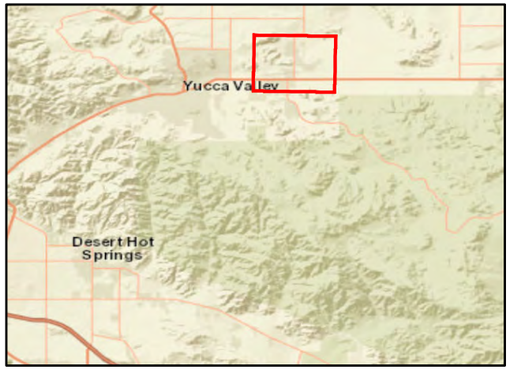
Within the DA, there is a school site at the north end that incorporates a retention basin to gather and retain runoff from the school. This feature has an overflow that spills onto Sunburst Avenue and is channeled along a concrete ditch to then run along the road. This feature was not considered to be jurisdictional due to it being fully constructed and not receiving ordinary storm flows or being connected with any of the nature features that were recorded. Erosional features were also observed within some of the dirt roads adjacent to the DA or partially within the DA, but not considered jurisdictional. The wetland delineation is depicted graphically below (Figure 5) and in Attachment A, on six sheets. The OHWM forms are included in Attachment B, and a list of plant species observed within the DA is included as Attachment C. A discussion of the aquatic resources is presented below. Representative site photographs are included as Attachment D.



Map Features

- Study Area
- HUC 12 Boundary

Sources: NAIP 2018, NWI California (20180904)



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Map Date: 5/31/2019

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Scale in Feet
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Figure 3. HUC 12 Watershed Boundaries

2019-076.001 Joshua Tree Sunburst Ave

Map Features

Study Area

Series Number - Series Description

NOTCOM - No Digital Data Available

3676 - Morongo loamy sand, 2 to 4 percent slopes

3677 - Morongo sand, 2 to 4 percent slopes

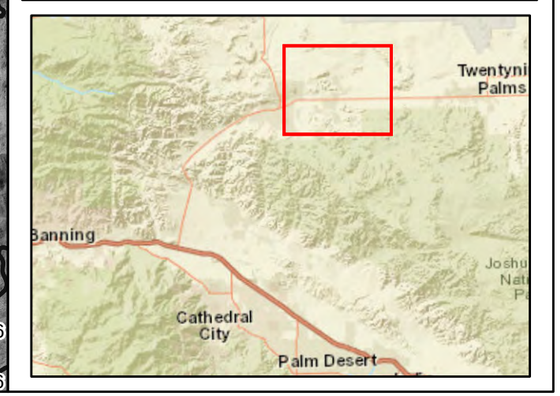
3680 - Morongo loamy sand, 2 to 8 percent slopes, dry

4606 - Pinecity-Rock outcrop association, 4 to 15 percent slopes

4804 - Rock outcrop-Ironped-Pinecity association, 30 to 60 percent slopes

4805 - Rock outcrop-Ironped association, 8 to 15 percent slopes

Sources: NAIP 2018, NWI California (20180904)



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Map Date: 5/31/2019

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Scale in Feet
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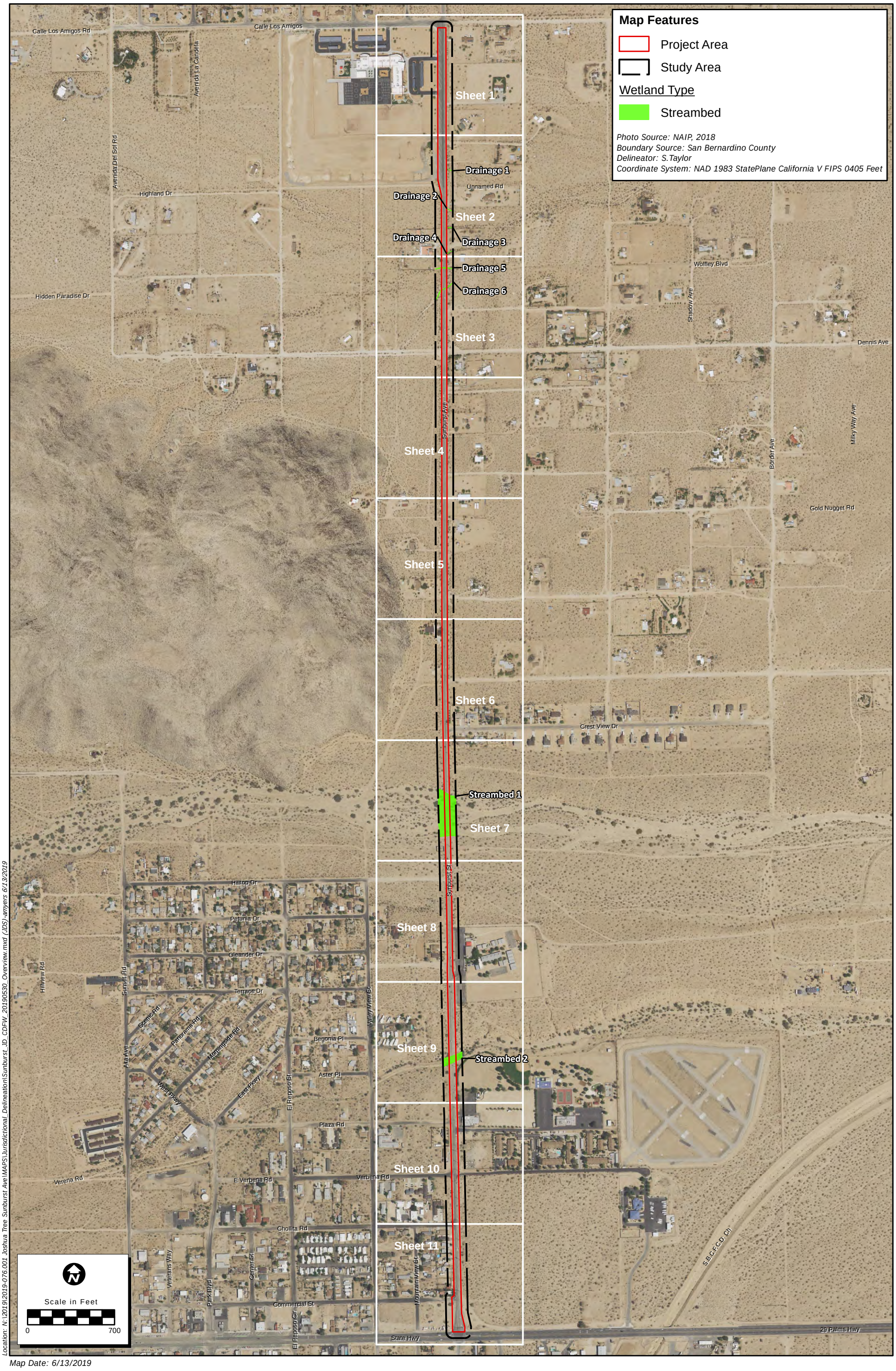
Figure 4. NRCS Soil Types

2019-076.001 Joshua Tree Sunburst Ave



Location: N:\2019\2019-076.001 Joshua Tree Sunburst Ave\MAPS\Jurisdictional_Delineation\Sunburst_JD_CDFW_20190530_Overview.mxd (JDS)-amyers 6/13/2019

Map Date: 6/13/2019

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Figure 5. CDFW Habitat - Overview

2019-076.001 Joshua Tree Sunburst Ave

4.2.1 Waters of the U.S./Wetlands

Neither non-wetland Waters of the U.S. or wetland Waters of the U.S. were suspected or recorded within the DA.

4.3 SWRCB Jurisdiction

The limits of SWRCB jurisdiction are presumed to generally follow those of the Waters of the U.S., or USACE jurisdiction, under Section 404 of the CWA. As such, no jurisdiction for the SWRCB is presumed to be present. However, under the Porter-Cologne Water Quality Control Act where beneficial uses are designated or derived from areas outside of USACE jurisdiction additional areas, such as CDFW jurisdictional areas, these areas may be considered jurisdictional as well.

4.4 CDFW Jurisdiction

CDFW jurisdiction encompasses all eight features mapped within the DA, consisting of Streambeds 1 and 2 and Drainages 1 through 6. The limits of CDFW jurisdiction include the limits of the extent of each stream's larger floodplain where flows are not regular but only occur during larger storm events. The CDFW areas also include jurisdictional habitat such as riparian trees, where present, but none of these habitats were present within the DA. The breakdown of CDFW jurisdiction, in terms of acreages of habitats present within the DA, is provided below (Table 2).

Table 2. CDFW Jurisdiction

Type	Acreage
Streambed 1	1.14
Streambed 2	0.21
Drainage 1	<0.01
Drainage 2	<0.01
Drainage 3	<0.01
Drainage 4	<0.01
Drainage 5	0.02
Drainage 6	0.02
Total	1.41

4.4.1 Unvegetated Streambed

All of the features within the DA consist of unvegetated streambeds along with some associated upland vegetation types. The hydrologic regime of each feature is considered to be ephemeral, meaning that they only flow during and immediately after storm events. Most of the year, these features are dry. There are two larger ephemeral streams located within the DA, consisting of Streambed 1 and Streambed 2. Each of these features is natural, with some developed portions associated with Sunburst Avenue and riprap or armoring along nearby channel banks. Both features are also subject to input by urban runoff along Sunburst Avenue as well as storm flows. Both features also consist of multiple channels. The smaller drainages (Drainages 1 through 6) are also considered ephemeral but consist of single, unvegetated channels. Below are additional details regarding each of these features.

Streambeds 1 and 2

Streambed 1 has an overall floodplain width of 400 feet, consisting of seven channels, plus connecting channels, and several sand bars or mounds between the channels. Surrounding vegetation, along the banks and on the mounds above the flow channels, consisted of desert willow (*Chilopsis linearis*), foothill paloverde (*Circidium floridum*), catclaw (*Acacia greggii*), creosote (*Larrea tridentata*), Mediterranean schismus (*Schismus barbatus*), white brickelbush (Brickelia incana), and western ragweed (*Ambrosia psylostachya*), interior goldenbush (*Ericameria linearifolia*), four-wing saltbush (Atriplex canescens), Sahara mustard (*Brassica tourneforti*) and coyote melon (*Cucurbita palmata*). Soils within the feature were sandy with several typical elements indicating regular surface flow – ripples, sediment splays, and a defined bed and bank. Wrack was evident on the branches of several of the shrub species.

Streambed 2 has an overall floodplain width of approximately 50 feet, consisting of two separate channels as well as connecting channels. Surrounding vegetation, along the banks, consisted of desert willow, foothill paloverde, catclaw, creosote, Mediterranean schismus, white brickelbush, and western ragweed. As with the other streambed, evidence of surface flow was present along with wrack.

In order to document the features within each of these streambeds, OHWM forms were prepared and are within Attachment B of this report. Each of the features, however, is not considered to support OHWM because they are not considered to be Waters of the U.S.

Project work within these features is not anticipated at this time.

Drainages 1 through 6

These features are all similar, having an unvegetated planar bottom with creosote bush scrub along the banks. The features vary in width from 3 feet to 5 feet. Of the recorded features only two, Drainages 5 and 6, cross Sunburst Avenue. The other features begin along the eastern road shoulder, where they convey runoff from the road. The channel bottoms are shallow and mostly clear of any vegetation. Plant species observed in the vicinity included creosote, cheesebush (*Hymenoclea salsola*), apricot mallow (*Sphaeralcea ambigua*) and rattlesnake weed (*Euphorbia albomarginata*).

Project work within these features is not anticipated at this time.

5.0 JURISDICTIONAL ASSESSMENT

As per Regulatory Guidance Letter 16-01, an applicant may request a PJD "in order to move ahead expeditiously to obtain a Corps permit authorization where the requestor determin*es that it is in his or her best interest to do so … even where initial indications are that the aquatic resources on a parcel may not be jurisdictional*" (USACE 2016b). A significant nexus evaluation is not necessary to obtain a PJD. The following information on connectivity of wetlands and other waters in the DA to TNW is provided should an Approved Jurisdictional Determination be necessary.

The features within the DA occur within a portion of the Mojave Desert which contains no major waterways, and none that are considered navigable. The streams in the region typically flow into playas which can seasonally be inundated but are regularly dry throughout most of the year. USACE Los Angeles District has not identified any tributary features to the DA as TNWs and therefore there is no connection to interstate waters considered present within the DA. Therefore, the aquatic resources within the DA likely do not have a significant nexus (affecting the chemical, physical, or biological integrity) with a downstream TNW, and are likely not subject to regulation under Section 404 of the CWA.

6.0 IMPACTS AND RECOMMENDATIONS

A total of 1.41 acres of aquatic resources have been mapped within the DA, consisting of several unvegetated streambeds of varying sizes. There were no suspected Waters of the U.S. (wetlands or non-wetlands) present within the DA. All mapped features are considered to be state-jurisdiction only. The Project as currently configured would entail no impacts to any of the recorded features, because the work is restricted to within the Sunburst Avenue paved portions and graded road shoulder.

Regulatory permitting is currently not anticipated to be needed since there is no placement of dredged or fill material into jurisdictional features, or alteration of streambeds, planned as a part of the Project.

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LIST OF ATTACHMENTS

Attachment A – Aquatic Resources Delineation

Attachment B – OHWM Forms and Wetland Determination Data Forms – Arid West

Attachment C – Plant Species Observed Onsite

Attachment D – Representative Site Photographs

ATTACHMENT A

Aquatic Resources Delineation

Map Features

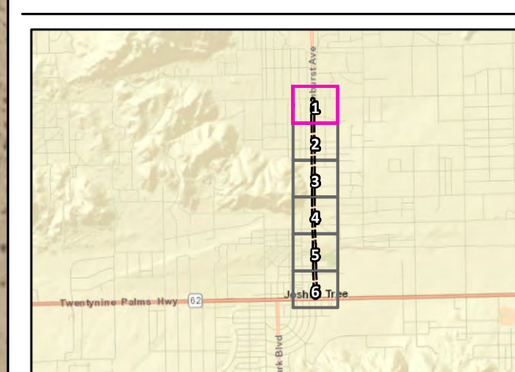
Project Area

Study Area

CDFW Habitat

Streambed (1.413 ac.)

Photo Source: NAIP, 2018
Boundary Source: San Bernardino County
Delineator: S.Taylor
Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet



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Map Date: 5/30/2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 200

Attachmend A. CDFW Habitat
(Sheet 1 of 6)
2019-076.001 Joshua Tree Sunburst Ave

Map Features

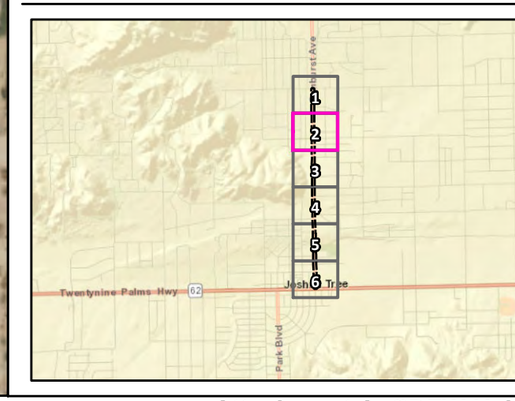
Project Area

Study Area

CDFW Habitat

Streambed (1.413 ac.)

Photo Source: NAIP, 2018
Boundary Source: San Bernardino County
Delineator: S.Taylor
Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet



ECORP: N:\2019\2019-076.001 Joshua Tree Sunburst Ave\MAPS\Jurisdictional_Delineation\Sunburst_JD_CDFW_20190530_MapBook.mxd (JDS) amyers 6/13/2019

Map Date: 5/30/2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 200

Attachment A. CDFW Habitat
(Sheet 2 of 6)
2019-076.001 Joshua Tree Sunburst Ave

Map Features

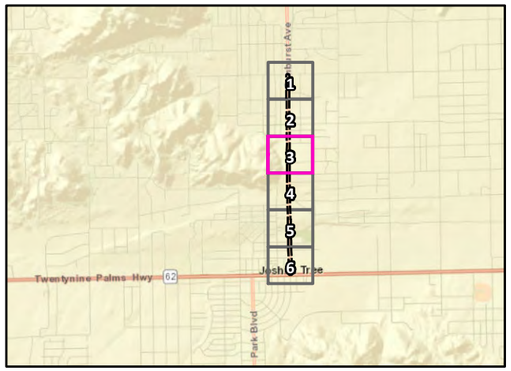
Project Area

Study Area

CDFW Habitat

Streambed (1.413 ac.)

Photo Source: NAIP, 2018
Boundary Source: San Bernardino County
Delineator: S.Taylor
Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet



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Map Date: 5/30/2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 200

Attachment A. CDFW Habitat
(Sheet 3 of 6)
2019-076.001 Joshua Tree Sunburst Ave

Map Features

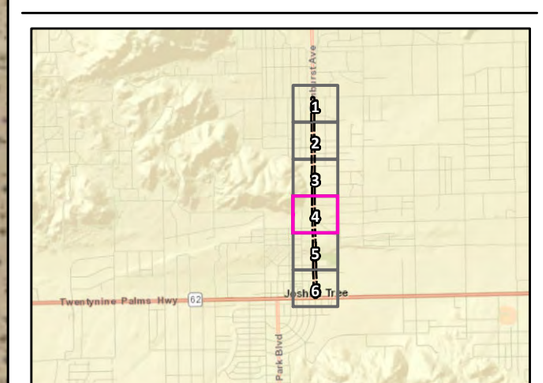
Project Area

Study Area

CDFW Habitat

Streambed (1.413 ac.)

Photo Source: NAIP, 2018
Boundary Source: San Bernardino County
Delineator: S.Taylor
Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet



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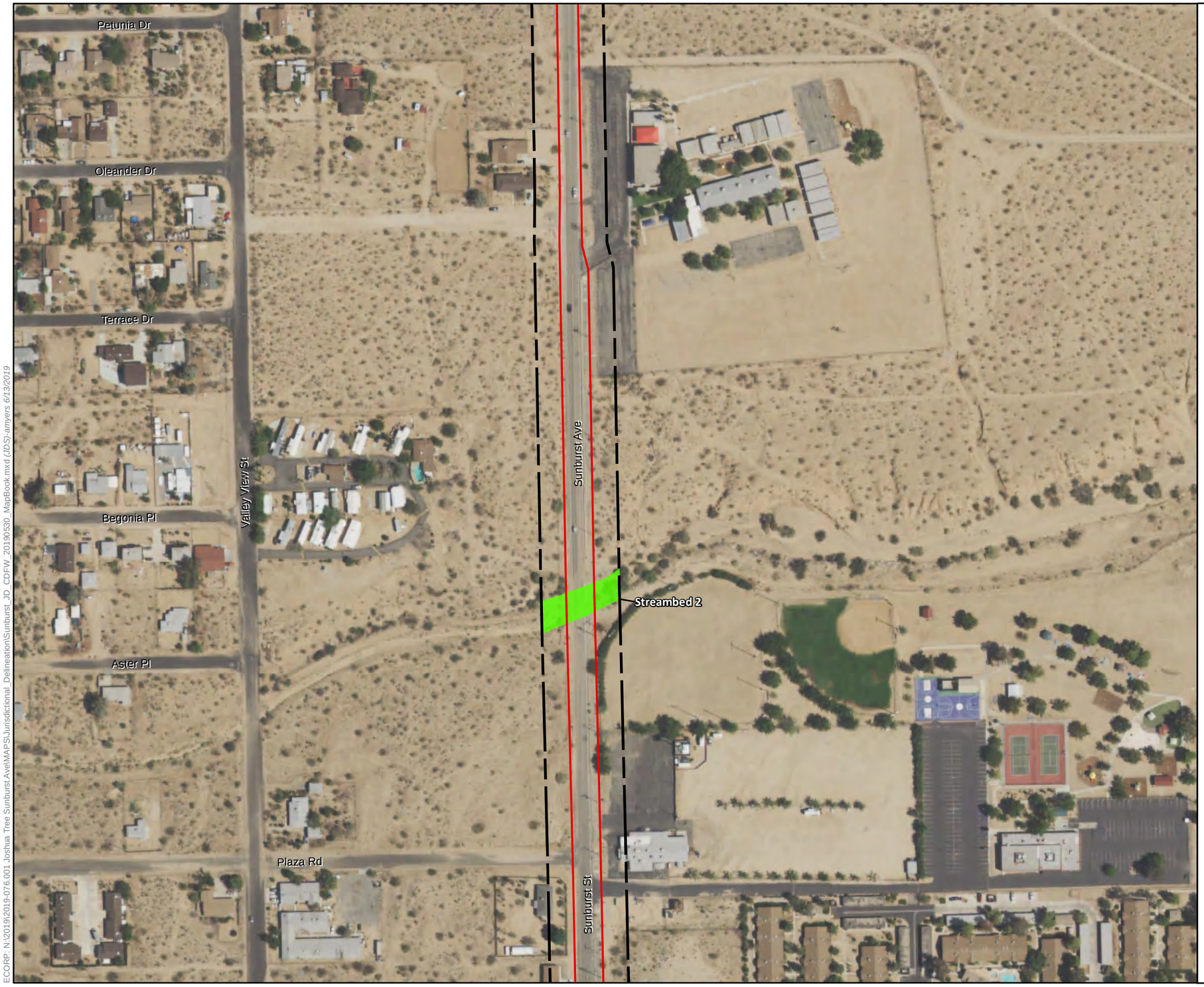
Map Date: 5/30/2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 200

Attachment A. CDFW Habitat
(Sheet 4 of 6)
2019-076.001 Joshua Tree Sunburst Ave



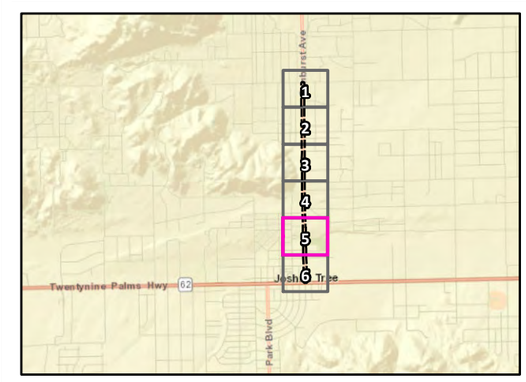
Map Features

- Project Area
- Study Area

CDFW Habitat

- Streambed (1.413 ac.)

Photo Source: NAIP, 2018
Boundary Source: San Bernardino County
Delineator: S.Taylor
Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet



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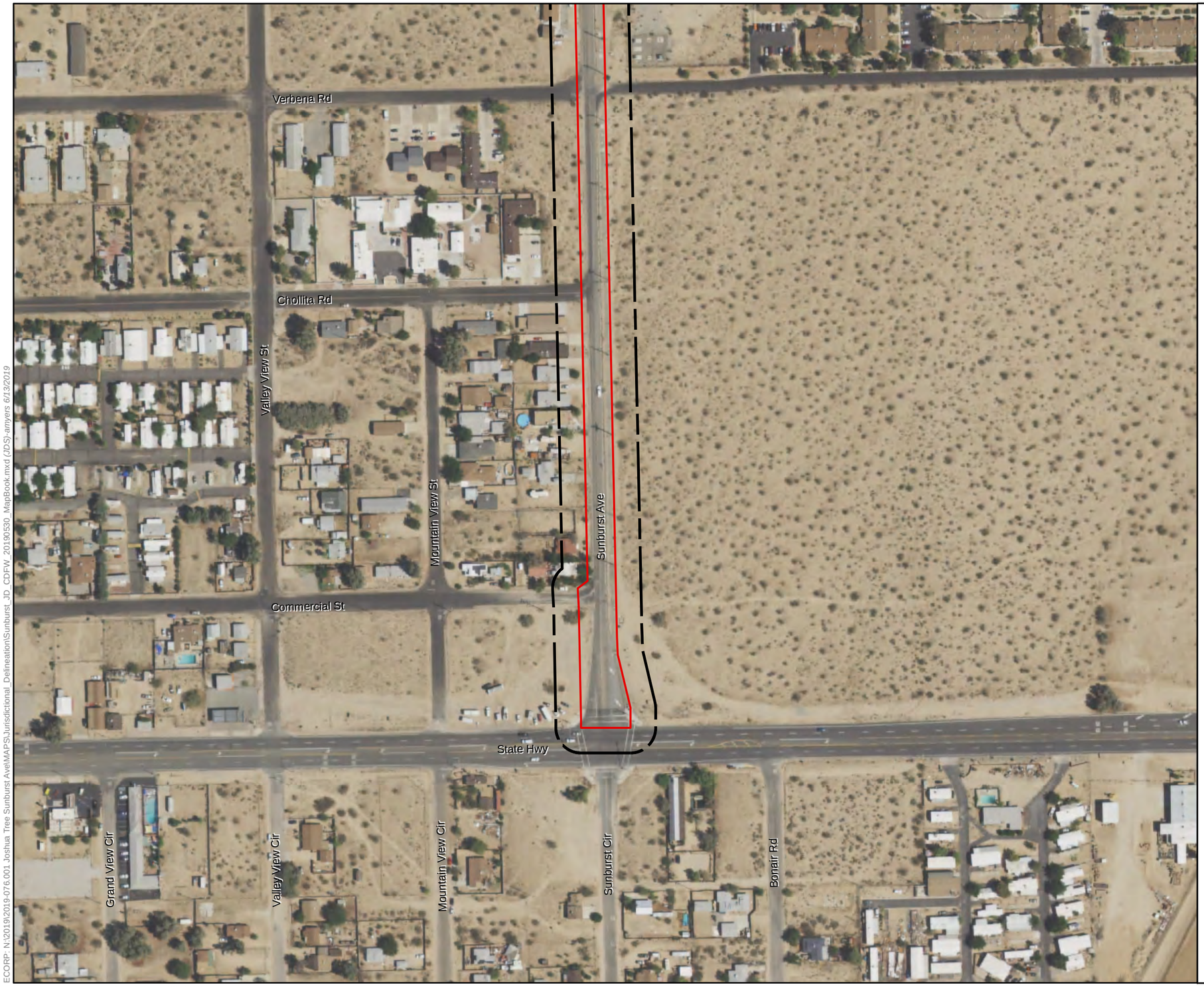
Map Date: 5/30/2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 200

Attachment A. CDFW Habitat
(Sheet 5 of 6)
2019-076.001 Joshua Tree Sunburst Ave



Map Features

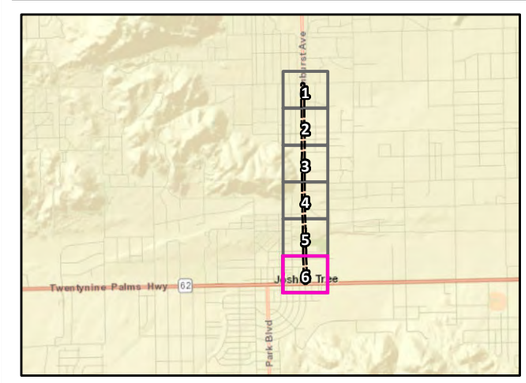
Project Area

Study Area

CDFW Habitat

Streambed (1.413 ac.)

Photo Source: NAIP, 2018
Boundary Source: San Bernardino County
Delineator: S.Taylor
Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet



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Map Date: 5/30/2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 200

Attachment A. CDFW Habitat
(Sheet 6 of 6)
2019-076.001 Joshua Tree Sunburst Ave

ATTACHMENT B

OHWM Forms and Wetland Determination Data Forms – Arid West Region

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Sunburst Ranch **Project Number:** **Stream:** SB 2 **Investigator(s):** STeph	**Date:** 6/10/19 **Town:** **Photo begin file#:**	**Time:** 1330 **State:** CA **Photo end file#:**

Y ☑ / N ☐ Do normal circumstances exist on the site?	**Location Details:** OHWM #1
Y ☐ / N ☑ Is the site significantly disturbed?	**Projection:** **Datum:** **Coordinates:**

Potential anthropogenic influences on the channel system:

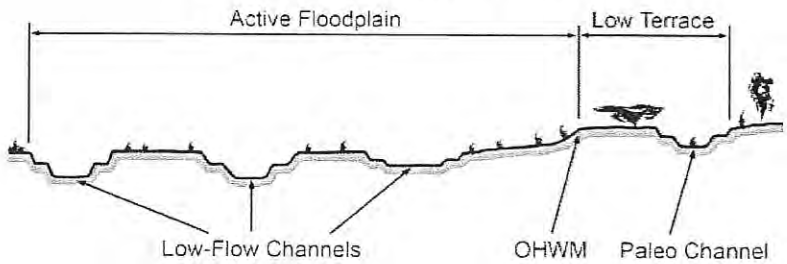
Some trail, Road crossing

Brief site description:

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

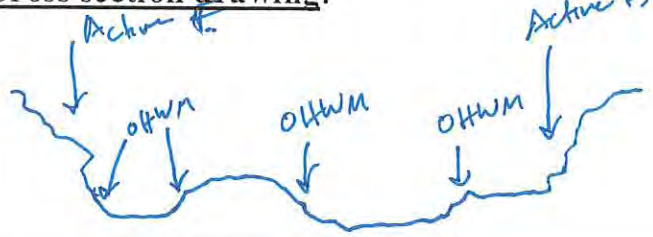


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☐ GPS
   - ☐ Other:

Project ID: OHWM #1 **Cross section ID:** SB2 **Date:** 6/10/19 **Time:**

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Floodplain unit:

- [x] Low-Flow Channel
- [ ] Active Floodplain
- [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: 55 % Tree: 40 % Shrub: 10 % Herb: 5 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Shrubs or trees not rooted in channel

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Sunburst Annex
Project Number: 2019-076.001
Stream: SB #1
Investigator(s): S Taylor

Date: 6/10/19 **Time:** 1400
Town: Joshua Tree **State:** CA
Photo begin file#: **Photo end file#:**

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details: OHWM # 2

Projection: **Datum:**
Coordinates:

Potential anthropogenic influences on the channel system:

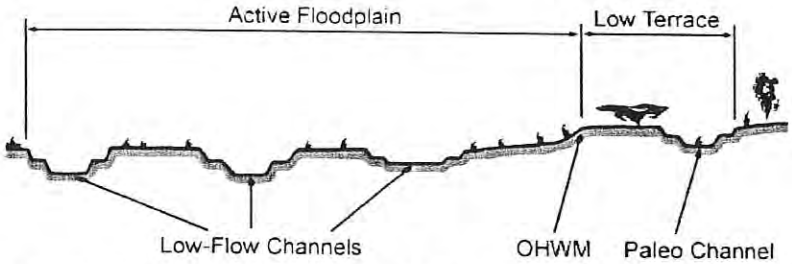
Road ~~crossing~~ crossing

Brief site description:

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☑ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☐ GPS
   - ☐ Other:

Project ID: OHWM #2 **Cross section ID:** SB1 **Date:** 6/10/19 **Time:**

Cross section drawing:

OHWM

GPS point: _____

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Floodplain unit:

- [x] Low-Flow Channel
- [ ] Active Floodplain
- [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: 10 % Tree: ____ % Shrub: ____ % Herb: 10 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [x] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Characterized by short duration flood events

ATTACHMENT C

Plant Species Observed Onsite

SCIENTIFIC NAME	COMMON NAME
Abronia villosa	sand verbena
Acacia greggii	catclaw
Ambrosia psilostachya	western ragweed
Atriplex canescens	four-wing saltbush
Brassica tournefortii	Sahara mustard
Brickellia incana	white brickelbush
Chilopsis linearis	desert willow
Circidium floridum	foothill paloverde
Conyza Canadensis	horseweed
Cucurbita palmata	coyote melon
Cylindropuntia echinocarpa	silver cholla
Ephedra viridis	Mormon tea
Ericameria linearifolia	interior goldenbush
Eriogonum fasciculatum	California buckwheat
Euphorbia albomarginata	rattlesnake weed
Hymenoclea salsola	cheesebush
Larrea tridentata	creosote bush
Psorothamnus schottii	indigo bush
Salsola australis	Russian thistle
Schismus barbartus	Mediterranean schismus
Salvia columbarae	chia
Sphaeralcea ambigua	apricot mallow

ATTACHMENT D

Representative Site Photographs

Below you will find a photo compendium containing photos of each jurisdictional feature within the Delineation Area, as well as the three sample point locations and the two OHWM locations. Photos in this compendium are referenced by Appendix A, CDFW Sheets 1 through 6.

Streambed 1 / OHWM Point 2 – Photopages 1 and 2

Streambed 2 / OHWM Point 1 – Photopages 2 and 3

Drainage 1 – Photopage 4

Drainage 2 – Photopage 4

Drainage 3 – Photopage 5

Drainage 4 – Photopage 5

Drainage 5 – Photopage 6

Drainage 6 – Photopage 7

Retention Basin – Photopage 8

Photo 1: Streambed 1, East Side
(See Sheet 4)

Photo 2: Streambed 1 West Side
(See Sheet 4)

Photo 3: Streambed 1, OHWM Point 2
(See Sheet 4)

Photo 4: Streambed 2 East Side
(See Sheet 5)

Photo 5: Streambed 2, West Side
(See Sheet 5)

Photo 6: Streambed 2, OHWM Point 1
(See Sheet 5)

Photo 7: Drainage 1
(See Sheet 1)

Photo 8: Drainage 2
(See Sheet 2)

Photo 9 –Drainage 3
(See Sheet 2)

Photo 10: Drainage 4
(See Sheet 2)

Photo 11: Drainage 5 East
(See Sheet 2)

Photo 12: Drainage 5 West
(See Sheet 2)

Photo 13: Drainage 6 East
(See Sheet 2)

Photo 14: Drainage 6 West
(See Sheet 2)

Photo 15: Retention Basin

Photo 16: Retention Basin Overflow

Appendix D – Cultural Resources Inventory and Evaluation

Cultural Resources Inventory and Evaluation

Sunburst Avenue Bike Trail Project in the Community of Joshua Tree

San Bernardino County, California

Prepared For:

County of San Bernardino Department of Public Works
Environmental Management Division
825 E. Third St., Room 123
San Bernardino, CA 92415-0835

Prepared By:

Robert Cunningham
ECORP Consulting, Inc.
215 North 5th Street
Redlands, California 92374

Under the direction of Principal Investigator:

Roger Mason, Ph.D., RPA

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

ECORP Consulting, Inc. has assisted public and private land owners with environmental regulation compliance since 1987. We offer full service capability, from initial baseline environmental studies through environmental planning review, permitting negotiation, liaison to obtain legal agreements, mitigation design, and construction monitoring and reporting.

Citation: ECORP Consulting, Inc. 2019. Inventory and Evaluation Report for the Sunburst Avenue Bike Trail Project. Prepared for County of San Bernardino Department of Public Works, San Bernardino, California.

MANAGEMENT SUMMARY

A cultural resources investigation was conducted for the Sunburst Avenue Bike Trail Project, a two-mile long linear project in the community of Joshua Tree, San Bernardino County, California. This investigation was conducted at the request of the County of San Bernardino Department of Public Works in support of a proposed bike lane along a two-mile long segment of Sunburst Avenue. The study was completed by ECORP Consulting, Inc. in compliance with the California Environmental Quality Act (CEQA).

In March 2019, the results of a cultural resources records search at the South Central Coastal Information Center (SCCIC) at California State University, Fullerton were provided to ECORP Consulting Inc. (ECORP) by the County of San Bernardino. The records search results provided to ECORP by the County indicated that two cultural resources were documented within the Project Area: a segment of historic-period Sunburst Avenue (P36-024659/CA-SBR-15700H) and a historic-period General Land Office Survey marker (P36-020672). An additional 37 resources have been documented within a one-mile radius of the Project Area. The records search indicated that portions of the Project Area had been previously surveyed in 1974, 1975, 2009, and 2013 and 12 additional cultural resources investigations were conducted within the one-mile records search radius between 1974 and 2013. In May 2019, ECORP requested a search of the Sacred Lands File from the Native American Heritage Commission (NAHC). The search results were negative, indicating no record for the presence of Native American Sacred Lands within the Project Area. In addition to the search of the Sacred Lands File, the NAHC identified eight Native American groups and individuals with historical and traditional ties to the Project Area.

As a result of the field survey, two historic-period utility line segments (SB-001 and SB-002) were documented and two previously recorded resources, a segment of Sunburst Avenue and a General Land Office (GLO) quarter section marker, were field checked. The GLO quarter section marker was found to be no longer extant. A segment of Sunburst Avenue and the two newly recorded utility segments were evaluated as not eligible for inclusion in the California Register of Historical Places (CRHR), and are therefore not Historical Resources as defined by CEQA. Therefore, the proposed Project will not result in impacts to a Historical Resource. The archaeological sensitivity of the Project Area is believed to be low. although there is some potential for ground-disturbing activities to expose previously unrecorded cultural resources. If new artifacts or features are encountered, recordation and evaluation of the resource(s) would be required. If found to be CRHR-eligible and significant impacts to the resource(s) cannot be avoided, additional mitigation measures would be required. If human remains of any kind are found during construction, the requirements of CEQA Guidelines Section 15064.5(e) and Assembly Bill (AB) 2641 shall be followed.

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Attachment C – ***Confidential*** Cultural Resource Site Locations and Site Records

LIST OF ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AMSL	Above Mean Sea Level
BP	Before present
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
CRHR	California Register of Historical Resources
DPR	Department of Parks and Recreation
MLD	Most Likely Descendant
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation's
PRC	Public Resources Code
Project	Zanja Trail Project - 7th Street to Church Street
RPA	Registered Professional Archaeologist
SB	Senate Bill
SCCIC	South Central Coastal Information Center
USGS	U.S. Geological Survey

1.0 INTRODUCTION

In May 2019, ECORP Consulting, Inc. (ECORP) conducted a cultural resources investigation of an approximately two-mile long linear Project Area in the community of Joshua Tree, San Bernardino County, California (Figure 1). The study was conducted at the request of the County of San Bernardino Department of Public Works in support of a proposed bike lane along Sunburst Avenue. The purpose of this study was to identify cultural resources that could be affected by the proposed Project. The study included a cultural resources records search, a Native American Heritage Commission (NAHC) Sacred Lands File search, a field survey, and resource evaluations for the California Register of Historical Resources (CRHR) and the National Register of Historic Places (NRHP). This Project was completed in compliance with Section 106 of the National Historic Preservation Act (NHPA) and the California Environmental Quality Act (CEQA).

2.0 PROJECT DESCRIPTION AND SETTING

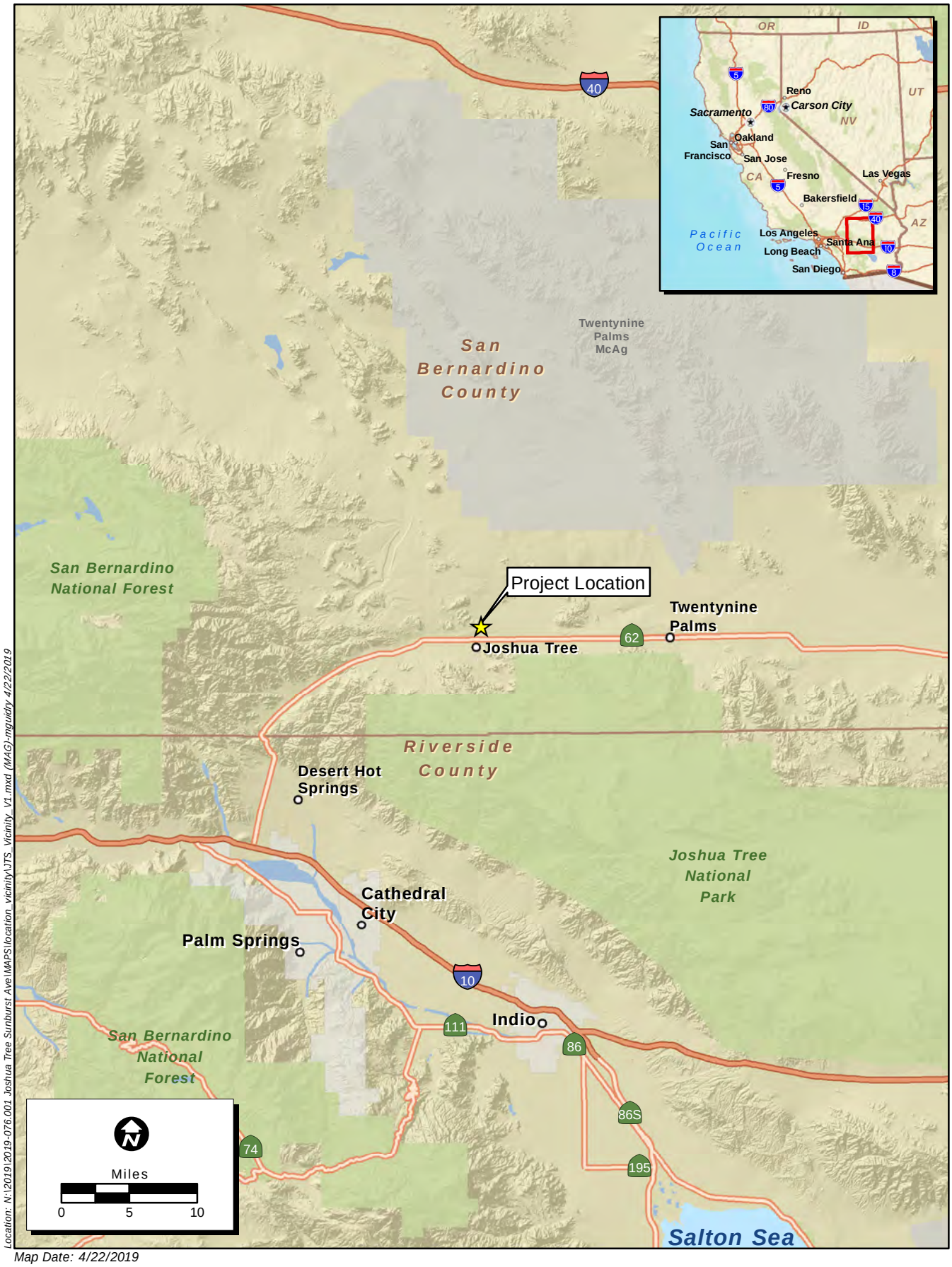
The proposed undertaking includes construction of a Class I Bike Path and a Class II Bike Lane along an approximately two-mile long segment of Sunburst Avenue between SR-62 to the south and Calle Los Amigos to the north, in the unincorporated community of Joshua Tree (Figure 1). As shown on the U. S. Geological Survey (USGS) 7.5-minute Joshua Tree North, California topographic quadrangle map (1972), the Project Area is located in Sections 24 and 25 of Township 1 North, Range 6 East of the San Bernardino Base and Meridian (Figure 2).

The elevation of the Project Area ranges from 2,741 feet above mean sea level (AMSL) to 2,693 feet AMSL. Several seasonal drainages cross the Project Area. Sediments in the area consist of Pleistocene and Recent Quaternary alluvial sediments and Pleistocene older alluvial sediments, composed of sedimentary and volcanic rocks (Dibblee 1967). Vegetation within the Project Area consists primarily of creosote, bursage, and Joshua tree. Sediments within the Project Area are highly disturbed due to road construction and road shoulder maintenance. At the time of the cultural resources field survey, ground visibility was overall very good (approximately 95-percent visibility).

2.1 Regulatory Context

To meet the regulatory requirements of this Project, this cultural resources investigation was conducted pursuant to the provisions for the treatment of cultural resources contained in CEQA (Public Resources Code [PRC] § 21000 et seq.) The goal of CEQA is to develop and maintain a high-quality environment that serves to identify the significant environmental effects of the actions of a proposed project and to either avoid or mitigate those significant effects where feasible. CEQA pertains to all proposed projects that require state or local government agency approval, including the enactment of zoning ordinances, the issuance of conditional use permits, and the approval of development project maps.

CEQA (Title 14, California Code of Regulations [CCR], Article 5, § 15064.5) applies to cultural resources of the historical and prehistoric periods. Any project with an effect that may cause a substantial adverse change in the significance of a cultural resource, either directly or indirectly, is a project that may have a significant effect on the environment. As a result, such a project would require avoidance or mitigation of impacts to those affected resources. Significant cultural resources must meet at least one of four criteria



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Map Date: 4/22/2019

Service Layer Credits: Sources: Esri, USGS, NOAA

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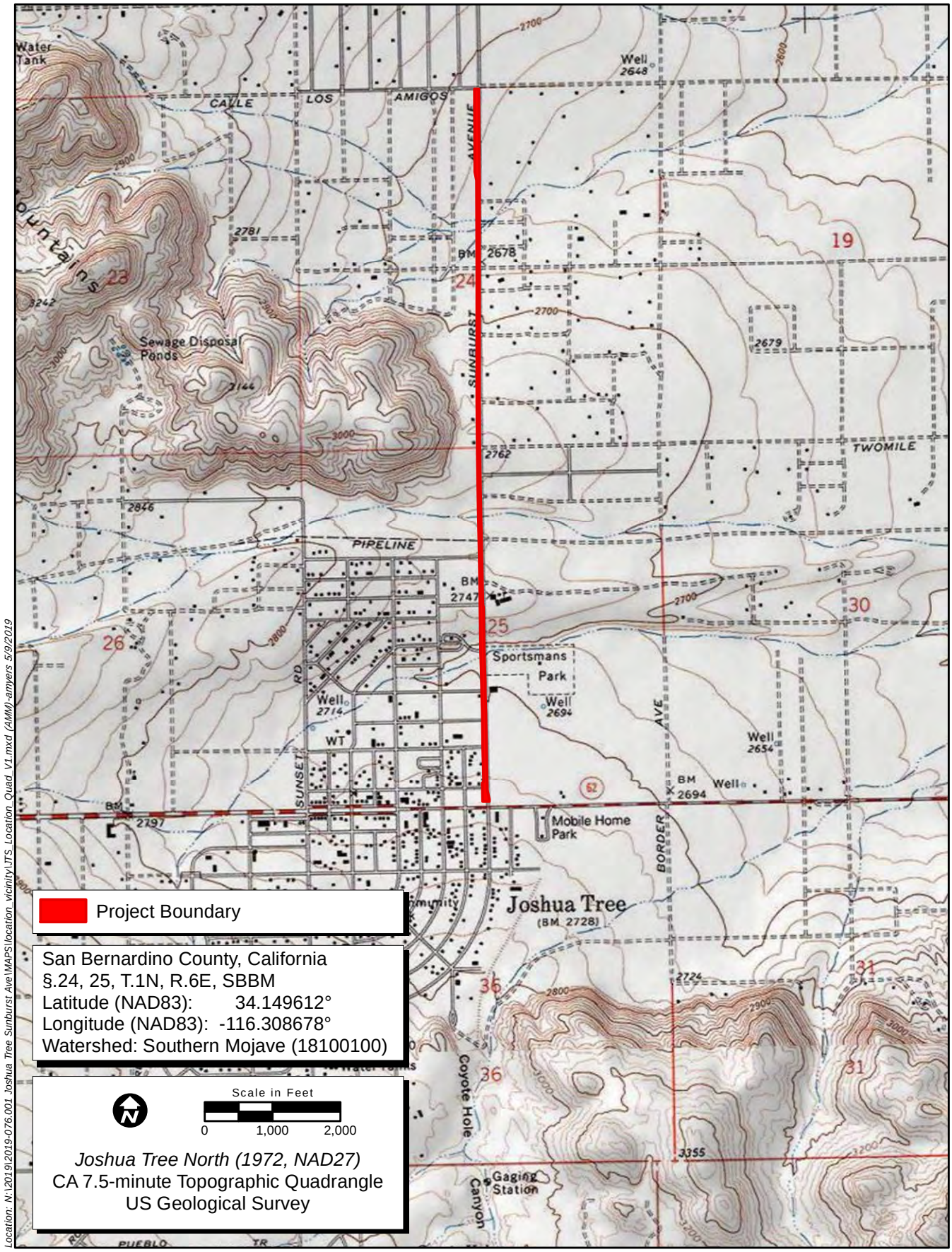
Figure 1. Project Vicinity

2019-076.001 Joshua Tree Sunburst Ave



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Map Date: 5/9/2019

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Figure 2. Project Location

2019-076.001 Joshua Tree Sunburst Ave

that define eligibility for listing on the California Register of Historic Resources (CRHR) (PRC § 5024.1, Title 14 CCR, § 4852). Resources listed on or eligible for inclusion in the CRHR are considered Historical Resources under CEQA.

2.2 Report Organization

The following report documents the study and its findings and was prepared in conformance with the California Office of Historic Preservation's (OHP's) *Archaeological Resource Management Reports: Recommended Contents and Format.* Attachment A contains documentation of a search of the Sacred Lands File and Native American outreach. Attachment B presents Project Area photographs, and Attachment C presents a site location map and contains confidential cultural resource site locations and site records.

Sections 6253, 6254, and 6254.10 of the California Code authorize state agencies to exclude archaeological site information from public disclosure under the Public Records Act. In addition, the California Public Records Act (Government Code § 6250 et seq.) and California's open meeting laws (The Brown Act, Government Code § 54950 et seq.) protect the confidentiality of Native American cultural place information. Under Exemption 3 of the federal Freedom of Information Act (5 U.S. Code 5 [USC]), because the disclosure of cultural resources location information is prohibited by the Archaeological Resources Protection Act of 1979 (16 USC 470hh) and Section 304 of the National Historic Preservation Act (NHPA), it is also exempted from disclosure under the Freedom of Information Act. Likewise, the Information Centers of the CHRIS maintained by the OHP prohibit public dissemination of records search information. In compliance with these requirements, the results of this cultural resource investigation were prepared as a confidential document, which is not intended for public distribution in either paper or electronic format.

3.0 CULTURAL CONTEXT

3.1 Regional Prehistory

The Mojave Desert chronology is based on studies by Earle et al. (1998), Price et al. (2009), and Warren (1984). The temporal units used by Sutton et al. (2007) for the Mojave Desert were termed complexes because it was thought each complex represented a specific cultural adaptation or even a cultural group. However, cultural characteristics may vary within a temporal unit, both temporally and spatially. In the greater Mojave Desert region, the juxtaposition of different foothill- and desert-based adaptive systems and, apparently, of different cultural groups, makes the identification of a single complex as being characteristic of a temporal unit problematic. The temporal units used here are periods based on shifts in projectile point types. Such projectile point changes are used to mark temporal units, since this class of artifacts is the only one that can definitely be said to be characteristic of each temporal unit (period) from the Pleistocene to Spanish contact (Sutton 2017:4). Dates for the periods are from Sutton (2016:267-268). The Mojave Desert chronology is shown in Table 1 and each period is discussed below.

Table 1. Mojave Desert Chronology

Period	Years
Clovis Period	12,000 to 9500 BC
Lake Mojave Period	9500 to 7000 BC
Pinto Period	8250 to 2500 BC
Gypsum Period	2500 BC to AD 225
Rose Spring Period	AD 225 to 1100
Late Prehistoric Period	AD 1100 to AD 1769
Mission Period	AD 1769 to AD 1835

Although there is archaeological evidence for human occupation before 12,000 BC elsewhere in the Americas, no cultural material dating to the time before the Clovis Period has been found in the Mojave Desert.

3.1.1 Late Pleistocene/Early Holocene

Clovis Period (Fluted Point Complex) (12,000 to 9500 BC)

The Clovis Period was an era of environmental transition between the late Pleistocene and early Holocene. The Clovis Period within the Mojave Desert is represented by fluted projectile points that were used by big game hunters. Fluted projectile points, including both Clovis points and Great Basin Corner-Notched points, were hafted to the end of a throwing spear. Fluted points have been discovered along the shores of former pluvial lakes at China Lake Naval Weapons Station and Edwards Air Force Base. There are two sites at China Lake with Clovis points, as well as Lake Mojave points. Thus, it is not known if other artifacts at these sites are associated with Clovis Period or Lake Mojave Period, or both. All other Clovis points in the Mojave Desert occur as isolated surface finds (Sutton 2018). It is thought that the Clovis groups consisted of small bands of hunters who followed big game herds.

Early and Middle Holocene

The people who occupied the Mojave Desert during the Early and Middle Holocene are thought to be descended from the Clovis megafauna hunters, who adapted to warming and drying conditions after the ice age ended. During the Early Holocene, the focus was on hunting artiodactyls (deer and mountain sheep) around the remnant lakes. During the warm arid conditions of the Middle Holocene, these groups became more generalized foragers, who hunted and trapped large, medium, and small mammals and added plant foods to the diet.

Lake Mojave Period (9500 to 7000 BC)

During the Early Holocene the climate became warmer and drier, resulting in a changing distribution of floral and faunal communities. However, there were still remnant pluvial lakes at this time. Lake Mojave Period sites are typically (but not exclusively) found around the margins of ancient lakes. The Lake Mojave

tool assemblages include Great Basin Stemmed series projectile points, including Lake Mojave and Silver Lake points. The shift from fluted points to stemmed points may indicate a shift from hunting megafauna to hunting artiodactyls. Sutton (2018) says that the fluted points were used on thrusting spears in an intercept hunting strategy, while the stemmed points of the Lake Mojave period were likely used on smaller spears launched with a spear-thrower (atlatl). Other flaked-stone tools include crescents (eccentrics), leaf-shaped bifaces (cutting and piercing tools), formed unifaces including large-domed scrapers and small beaked engravers, and cores from which flakes could be removed as needed. The cores were also used as tools (Sutton 2018). Ground stone implements occur in small numbers during this time (Warren 2002) and indicate the addition of hard seeds in the diet. It appears that Lake Mojave groups gradually adapted to a desiccating environment, resulting in shifts in technology and subsistence, with exploitation of additional ecozones.

Pinto Period (8250 to 2500 BC)

Pinto points first appear about 8250 BC. The Pinto Period overlaps in time with the Lake Mojave Period because both Great Basin Stemmed points and Pinto points occur during the overlapping period of time (8250 to 7000 BC). The Pinto Period was a time of increasing aridity culminating in the Mid-Holocene Warm Period, circa (ca.) 5500-2500 BC. The disappearance of lakes was followed by a great reduction in streams and springs. By the end of the period, water could be obtained only at a small number of springs. The desert vegetation community similar to that of today developed during this period. Sites associated with this era are usually found in open settings, in relatively well-watered locales representing isolated oases of high productivity, such as fossil stream channels and springs. Increasing amounts of ground stone tools suggest increasing use of small seeds. Artiodactyl hunting continued, but increasing aridity reduced the number of deer available. Small animals such as rabbit, rodent, reptile, and fresh water mussel resources are present in significant quantities. The artifact assemblage is similar to the Lake Mojave assemblage. Pinto projectile points replaced Lake Mojave points and Silver Lake points, and crescents and engravers were no longer used. Drills were added to the assemblage and the number of ground stone tools increased (Warren 2002). Warren (2002:139) sees the shift in projectile point types and the increasing use of plant foods during the Pinto Complex as resulting from decreasing numbers of artiodactyls (deer and mountain sheep) during this warm, dry period. Pinto points may have been more efficient in taking artiodactyls because the shouldered Pinto points stayed inside the animal after it was shot (Warren 2010).

Late Holocene

Annual rainfall increased and resource productivity improved significantly at the beginning of the Late Holocene after about 4500 BP (ca. 2500 BC). During the Late Holocene there is an increase in population, along with increasing sedentism and intensification of resource use in and around the Mojave Desert. Three periods were defined within the Late Holocene in the Mojave Desert: the Gypsum Period (ca. 2500 BC to AD 225), the Rose Spring Period (roughly equivalent to Warren's Saratoga Springs Period, ca. AD 225 to 1100), and the Late Prehistoric Period (ca. AD 1100 to 1769) (Sutton 2016; Sutton et al. 2007; Warren 1984). Each period has characteristic projectile point types. The settlement system seen in the Mission Period with permanent villages, especially along the valley margins, and temporary camps for collecting resources within the village's territory likely began to develop during the Gypsum Period.

Gypsum Period (ca. 2500 BC to AD 225)

During the Gypsum Period, the artifact assemblage included Elko and Gypsum dart points and bifaces. Ground stone milling tools become relatively commonplace. The subsistence pattern, based on material found in temporary camps in the desert, included generalized hunting activities (large, medium, and small mammals and desert tortoise) and seed processing, indicated by more numerous milling stones than in previous periods. Mesquite, located in high water table areas, may have been an important resource during Gypsum times. Quartz crystals, paint, and rock art indicate ritual activities (Sutton 2017:9).

Rose Spring Period (ca. AD 225 to 1100)

The Rose Spring Period is also known as the Saratoga Spring Period. The bow and arrow were introduced in the Mojave Desert at the beginning of the Rose Spring Period circa AD 225. Rose Spring and Eastgate arrow points were used, along with Cottonwood Triangular points beginning around AD 900. Other artifacts include stone knives and drills, bone awls, and ground stone tools.

Late Prehistoric Period (ca. AD 1100 to 1769)

Desert Side-Notched and Cottonwood Triangular arrow points were used during the Late Prehistoric Period. The rest of the Rose Spring artifact assemblage continued into the Late Prehistoric period with the addition of pottery. Bedrock mortars, indicating intensive acorn use, may have been used earlier in the late Holocene, but were numerous in the residential bases and villages in the desert margin. Some desert floor sites also featured bedrock mortars or portable mortars and pestles.

Mission Period (AD 1769 to 1835)

The Mission Period begins with the Portola Expedition in AD 1769, which established the first permanent Spanish presence in California. Franciscan friars established missions at San Gabriel (AD 1771) and San Fernando (AD 1797) (Castillo 1978). The first written historical information about Native Americans in the Mojave Desert region dates from the 1770s, during the Mission Period. Ethnohistorical documentation from this period includes mission records and the accounts of Spanish friars and soldiers.

Other Temporal Units

Sutton (2018) recently proposed new temporal units consisting of patterns and phases with dating based on BP, rather than BC, for the Late Pleistocene through the Middle Holocene. In Sutton's new scheme, the Clovis Period is now the Lakebed Pattern, which is divided into Lakebed I (11,600 to 11,000 BP) Phase and Lakebed II (11,000 to 10,200 BP) Phase. The Lake Mojave Period is the Lake Mojave Pattern with Lake Mojave I (10,200 to 9300 BP) and Lake Mojave II (9300 to 8500 BP) Phases. The Pinto Period is the Pinto Pattern with Pinto I (8500 to 7500 BP), Pinto II (7500 to 5000 BP), and Pinto III (5000 to 4000 BP) Phases. Note that in this new chronology, the Lake Mojave Pattern does not overlap in time with the Pinto Pattern. Sutton's new chronology is not used in this research design since it has not yet been evaluated by other archaeologists who specialize in the Late Pleistocene and Early Holocene of the Mojave Desert.

3.2 Ethnohistory

The Project Area is located north of the community of Joshua Tree, in the Mojave Desert, near the territorial junction of the Chemehuevi group of southern California Native Americans. This group is likely to have utilized resources in the Project Area vicinity prior to contact with Europeans, which took place around AD 1769.

3.2.1 Chemehuevi

The Chemehuevi are one of 16 identified linguistic Southern Paiute groups, and likely originated in the Great Basin. The main territory occupied by the Southern Paiute-Chemehuevi group was west of the Colorado River, extending approximately from present-day Blythe to just north of Needles, and into California halfway to Twentynine Palms (Kelly and Fowler 1986; Earle 1997). Despite wide territory, the population likely never exceeded 800 people (Miller and Miller 1967). The name Chemehuevi is a Mohave word, possibly meaning "mixed with all", but they call themselves Nuwuwu, or "the people" (Laird 1976; Elzinga 2007). The Chemehuevi language is a nearly extinct dialect of the Ute language of the Numic branch of the Uto-Aztecan stock, which extends from the Great Basin of North America through Mexico (University of California, Berkeley 2018).

Although the Chemehuevi hunted large game, small game was the chief source of protein and included rabbits, wood rats, mice, gophers, squirrels, chipmunks, and birds. Plant foods included pinyon nuts, roots, agave, seeds, and berries. Some horticulture was being practiced at the time of Spanish contact in the 1770s (Earle 1997). Settlement was mobile and scattered, with recurrent residence in specific locations. Individual households grouped together in assemblages that traveled as units on hunting and gathering trips (Kelly and Fowler 1986). Structures varied according to the season. During the winter, the Chemehuevi lived in earth-covered dwellings or caves. In warmer months, many lived under trees, sometimes with extra brush added for denser shade (Kelly and Fowler 1986).

Like their neighbors and allies, the Mohave, song plays an important role in the social structure and dynamic of the Chemehuevi. Hunting territory and clan affiliation are defined in songs passed in a patriarchal line and include four song cycles: Salt, Mountain Sheep, Deer, and Shaman (Press 1980). The song cycles are tied to topography and landmarks, and delineate boundaries for hunting and ceremony. Among these ceremonies is a multiple-day journey of singing Salt Songs and corresponding movement across the southwestern United States meant to guide spirits to the afterlife. Songs and sets of songs are timed to correspond with travel to specific geographical points creating a "songscape" (Stoffle et al. 1997). The route that is created by this ritual is called the Salt Song Trail. It begins and ends at the Bill Williams Fork in Arizona and traverses portions of southwestern Utah, southern Nevada, Death Valley, and southern California (Laird 1967; Stoffle and Arnold 2003).

In 1867, Chemehuevi living near the Colorado convergence became involved in a plot with the Paiutes to acquire wives from Chemehuevi allies, the Mohave. The resulting conflict drove the Chemehuevi from the convergence to the California desert. A number of the displaced proceeded south to as far away as the Oasis at Twentynine Palms, a former Serrano camp that had been abandoned following a smallpox outbreak. The Oasis became a permanent part of their seasonal migration, as well as Bear Valley, Banning, and Indio during various harvests. Most of those who came to the Oasis remained there long after other

Chemehuevi had returned to the Colorado River, despite the return of some Serrano and the installation of several white settlements. Following a scandal among the Indian population at the Oasis in 1909, members of the Chemehuevi from that area began to move to Indio or to the Morongo Reservation. The last member left the Oasis in 1913 (Miller and Miller 1967).

Beginning as early as the end of the eighteenth century, the Southern Paiute-Chemehuevi were being enslaved or baptized in Spanish settlements. In response, some Chemehuevi raided travelers along the Old Spanish Trail from the 1850s to the early 1870s. During that time, efforts were made to settle the Chemehuevi on the Colorado River Reservation, but many resisted relocation until the twentieth century. Old World diseases had taken their toll on the population. In addition, members of the tribe were lost after being taken as prisoners of war and exchanged with the Spanish in an active slave trade in what became a common occurrence among themselves, their allies, and their enemies. The early 1900s saw the establishment of a number of small reservations in Utah for the Southern Paiute, including the Chemehuevi, though some of the desert populations have been reported to have settled in the Morongo Reservation in California (Miller and Miller 1967; Kelly and Fowler 1986). A population count, taken in 1980, numbered the Southern Paiute-Chemehuevi at approximately 124 (Kelly and Fowler 1986). More recently, in the 1990s and early 2000s, surviving Chemehuevi have recorded and analyzed the ceremonial Salt Songs. The documentation of the songs' descriptions of places and religious ceremony are an effort to re-establish claims on ancestral lands and educate the greater public about Native American issues (Jolivétte 2006).

3.2.2 Serrano

The Project Area is located within the territory known to have been occupied by the Serrano group of Native Americans at the time of contact with Europeans, around AD 1769. The Serrano occupied an area in and around the San Bernardino Mountains and northward into the Mojave Desert. Their territory also extended west along the north slope of the San Gabriel Mountains, east as far as Twentynine Palms, north into the Victorville and Lucerne Valley areas, and south to the Yucaipa Valley and San Jacinto Valley (Cultural Systems Research 2005). The Serrano speakers in the Mojave Desert who lived along the Mojave River were known as Vanyume. Serrano is a language within the Takic family of the Uto-Aztecan language stock.

The Serrano were mainly hunters and gatherers who occasionally fished. Game hunted included mountain sheep, deer, antelope, rabbits, small rodents, and various birds, particularly quail. Vegetable staples consisted of acorns, pinyon nuts, bulbs and tubers, shoots and roots, juniper berries, mesquite, barrel cacti, and Joshua tree (Bean and Smith 1978).

A variety of materials were used for hunting, gathering, and processing food, as well as for shelter, clothing, and luxury items. Shells, wood, bone, stone, plant materials, and animal skins and feathers were used for making baskets, pottery, blankets, mats, nets, bags and pouches, cordage, awls, bows, arrows, drills, stone pipes, musical instruments, and clothing (Bean and Smith 1978).

Settlement locations were determined by water availability, and most Serranos lived in villages near water sources. Houses and ramadas were round and constructed of poles covered with bark and tule mats

(Kroeber 1925). Most Serrano villages also had a ceremonial house used as a religious center. Other structures within the village might include granaries and sweathouses (Bean and Smith 1978).

Serrano social and political units were clans, patrilineal exogamous territorial groups. Each clan was led by a chief who had both political and ceremonial roles. The chief lived in a principal village within the clan's territory. The clans were part of a moiety system such that each clan was either a wildcat or coyote clan and marriages could only occur between members of opposite moieties (Earle 2004). On the north side of the San Bernardino Mountains, clan villages were located along the desert-mountain interface on Deep Creek, on the upper Mojave River, in Summit Valley, and in Cajon Pass. The principal plant food available near these villages was juniper berries. These villages also had access to mountain resources, such as acorns and pinyon nuts.

Partly due to their mountainous and desert inland territory, contact between Serrano and Euro-Americans was minimal prior to the early 1800s. In 1819, an *asistencia* (mission outpost) was established near present-day Redlands and was used to help relocate many Serrano to Mission San Gabriel. However, small groups of Serrano remained in the area northeast of the San Gorgonio Pass and were able to preserve some of their native culture. Today, most Serrano live either on the Morongo or San Manuel reservations (Bean and Smith 1978).

3.3 History

The first European to visit Alta California (the area north of Baja California) was Spanish maritime explorer Juan Rodriguez Cabrillo, in 1542. Sent north by the Viceroy of New Spain (Mexico) to look for the Northwest Passage, Cabrillo visited San Diego Bay, Catalina Island, San Pedro Bay, and the northern Channel Islands. In 1579, the English adventurer Francis Drake visited the Miwok Native American group at Drake's Bay or Bodega Bay. Sebastian Vizcaíno explored the coast as far north as Monterey in 1602. He reported that Monterey was an excellent location for a port (Castillo 1978). Vizcaíno also named San Diego Bay to commemorate Saint Didacus. The name began to appear on European maps of the New World by 1624 (Gudde 1998).

Colonization of Alta California began with a land expedition led by Spanish army captain Gaspar de Portolá. In 1769, Portolá and Father Junipero Serra, a Franciscan missionary, explored the California coast from San Diego to the Monterrey Bay area. As a result of this expedition, Spanish missions to convert the native population to Catholicism, presidios (forts), and pueblos (towns) were established. The Franciscan missionary friars built 21 missions in Alta California, beginning with Mission San Diego in 1769 and ending with the missions in San Rafael and Sonoma, founded in 1823. Mission San Diego was established to convert the Native Americans that lived in the area, known as the Kumeyaay or Diegueño. Mission San Gabriel Archangel began in 1771, east of what is now Los Angeles, to convert the Tongva or Gabrielino. Mission San Fernando, also in Tongva/Gabrielino territory, was built in 1797. Mission San Juan Capistrano was established in 1776 on San Juan Creek (in what is now southern Orange County) to convert the Agjachemem or Juaneño. Mission San Luis Rey began in 1798 on the San Luis Rey River (in what is now northern San Diego County) to convert the Luiseño (Gudde 1998).

Some missions later established outposts in inland areas. An asistencia (mission outpost) of Mission San Luis Rey, known as San Antonio de Pala, was built in Luiseño territory along the upper San Luis Rey River

near Mount Palomar in 1810 (Pourade 1961). A chapel administered by Mission San Gabriel Archangel was established in the San Bernardino area in 1819 (Bean and Smith 1978). The present asistencia within the western outskirts of present-day Redlands was built ca. 1830 (Haenszel and Reynolds 1975). The missions sustained themselves through cattle ranching and traded hides and tallow for supplies brought by ship. Large cattle ranches were established by Mission San Luis Rey at Temecula and San Jacinto (Gunther 1984). The Spanish also constructed presidios, or forts, at San Diego and Santa Barbara, and a pueblo, or town, was established at Los Angeles.

The Spanish period, which had begun in 1769 with the Portolá expedition, ended in 1821 with Mexican independence. After Mexico became independent from Spain, what is now California became the Mexican province of Alta California. The Mexican government secularized the missions in the 1830s and former mission lands were granted to retired soldiers and other Mexican citizens for use as cattle ranches. Much of the land along the coast and in the interior valleys became part of Mexican land grants, or ranchos (Robinson 1948). Rancho owners sometimes lived in one of the towns, such as San Diego (near the presidio), San Juan Capistrano (around the mission), or Los Angeles, but often resided in an adobe house on their own land.

The Mexican Period, which began with independence from Spain in 1821, continued until the Mexican-American War of 1846-1848. The American period began when the Treaty of Guadalupe Hidalgo was signed between Mexico and the United States in 1848. As a result of the treaty, Alta California became part of the United States as the Territory of California. Rapid population increase occasioned by the Gold Rush of 1849 led to statehood in 1850. Most Mexican land grants were confirmed to the grantees by U.S. courts, but usually with more restricted boundaries, which were surveyed by the U.S. Surveyor General's office. Floods and drought in the 1860s greatly reduced the cattle herds on the ranchos, making it difficult for their owners to pay the new American taxes on their thousands of acres. Many Mexican-American cattle ranchers borrowed money at usurious rates from newly arrived Anglo-Americans. Foreclosures and land sales eventually resulted in the transfer of most of the land grants into the hands of Anglo-Americans (Cleland 1941).

During the Spanish and Mexican periods, arid and semi-arid areas like present day Joshua Tree saw little activity because of their distance from the coast and the missions, and also because of the somewhat unsuitable conditions for large populations due to the low water supply and poor soil conditions. In an effort to populate and develop these public lands of the Western United States, two laws were passed by the U.S. Congress: the Homestead Act of 1862 and the Desert Land Act of 1877 Robinson 1948). Under the Homestead Act of 1862 any U.S. citizen, or intended citizen, could file an application to claim 160 acres of surveyed Government land. For the next five years, the homesteader had to build a house, live on the property, and cultivate the land. After five years, the homesteader could file for a patent (federal deed) for the land by submitting proof of residency and the required improvements to a local land office. Under the Desert Land Act of 1877, a maximum of 640 acres at $1.25 an acre was promised to those who would irrigate, farm, and develop the land within three years (Robinson 1948).

Desert Land Entry claims were made as early as 1888, although almost all were cancelled or relinquished. The earliest Homestead claims were filed in 1911, with patents issued beginning in 1916. In 1936, Joshua Tree National Monument was established to the southeast of the community of Joshua Tree, drawing

many visitors, but few who were willing to inhabit the area. Public land was no longer available for transfer into private ownership (except for mining claims and certain small tracts) after 1935 (Robinson 1948:175). However, as a result of the Small Tracts Act of 1938, small parcels that are isolated or difficult to manage, or were being used by nonfederal entities who believed they had a right to do so, were made available for sale (GAO 2001). Few individuals took advantage of the Small Tracts Act i until after World War II (WWII) when small-tract patents increased (Bureau of Land Management 2010). In 1941, the population of Joshua Tree was forty-nine. By 1947 the population reached just over 550 (Joshua Tree Chamber of Commerce n.d.).

After WWII, what began as a town containing only 49 people and 22 occupied buildings had quickly grown into a small community with a post office, a library, a Chamber of Commerce, a market, and 144 miscellaneous buildings that included homes, ranches, and businesses. The area was popular for turkey farming, boasting over 47,600 turkeys at its height. Today, there are no turkey farms, but visitors will see the occasional wild turkey roaming through town (Joshua Tree Chamber of Commerce n.d.). Turtle races, involving the Desert Tortoise, were a popular event from the late 1940s through 1973, when the passage of the Endangered Species Act prohibited the use of the now endangered Desert Tortoise. From 1973 to 1975, turtle races continued using local box turtles, until public outrage put a demise to the "sport" (Chelette 2000).

Today, the community of Joshua Tree encompasses 96 square miles of land in unincorporated San Bernardino County. The 9,000 individuals residing in the community are largely artists, retirees, telecommuters, and employees of Joshua Tree National Park. Joshua Tree serves as the Western Gateway to Joshua Tree National Park and is home to the Joshua Tree National Park Visitors Center, which attracts thousands of visitors each year (Chelette 2000).

3.4 Road Development Context

Following is a brief context of the theme of road development specifically during the period of time Sunburst Avenue was constructed and used. The context is included to better understand the social and economic factors associated with road development and how the resources fit within that context.

Road development in the U.S. primarily consisted of expanding local urban streets, utilitarian in design and function, in the eastern U.S. and moving westward across the nation. California roadways, in particular, largely consisted of dirt utilitarian roads for use by horse-drawn conveyances (buggies and wagons) from the period of the Gold Rush through the turn of the twentieth century. From 1890 to 1926, the groundwork was laid for the modern road network, largely due to a number of factors including the advent of the pneumatic tire and the expansion of production of the affordable personal automobile (the Ford Model T being the industry leader). These new convenient modes of transportation began to compete with the railroad system, which consisted of several hundred thousand miles of track in the U.S.. The railroads had previously been considered the most efficient and reliable mode of transportation and shipping. The increasing use of automobiles led automobile and automobile accessory manufacturers to usher in the "Good Roads Movement" (Marriott 2010).

The Good Roads Movement was first advocated by bicycle organizations seeking hard-surfaced roads. Automobile industry advocates, however, quickly found the development of a better planned road

network a greater concern. Despite national efforts to develop hard-surface roads, the prohibitive cost caused a priority shift in the Good Roads Movement from hard-surface roads to a well-planned road network. In California, many of these road networks began to be constructed during the late part of the nineteenth century and into the early part of the twentieth century, particularly in rural areas.

Rural road development was crucial for the expansion of agricultural lands because farmers and ranchers needed a better network of roads to transport their crops or goods from the farms and fields to train stations for transport. Prior to the Good Roads Movement, rural farmers depended on extremely underdeveloped roads, consisting mostly of known paths or routes to get to those stations while access to urban or other rural areas was limited because existing road networks often did not connect easily with each other. The agricultural industry began to flourish with use of the new road networks as a result of the Good Roads Movement. Light-duty developed roads were constructed and used by rural farmers and ranchers to transport their goods not only to local train stations but, through the new network of improved roads, to other urban areas or even other rural towns (Marriott 2010).

Eventually, by the latter part of the Good Roads Movement from 1910 to 1926, major intrastate and interstate highways, and even transcontinental highways such as the Lincoln Highway, were constructed. These large networks of roads were primarily in response to the occurrence of World War I and the nation's realization that if the war was ever fought on U.S. soil, the existing road networks could not support the necessary military mobilization for the war effort. Therefore, better connectivity in large roads and urban centers became a top priority toward the end of the Good Roads Movement. Early highways were developed throughout California and the rest of the nation. These highways were built to allow quicker transportation across all-weather road surfaces from city to city. Pavement quickly became the new medium for these longer highways. Eventually, the early highways throughout the nation, including California, became the basis for the U.S. highway system that was established in 1926. The objective of the new system was to fix the confusion of named roads and route markings that troubled travelers along these longer roads and highways by developing an interstate/intrastate route numbering system.

Prior to the advent of the U.S. highway system, most roads were named depending on the location of the segment of road. The names would often change as roads extended in length depending on the county or city, causing a great deal of confusion. The U.S. highway numbering system was designed so longer highways and routes that crossed state lines would no longer be named roads, but would instead have a uniform set of numbers. Under the system, the highways were numbered so that even-numbered routes would run east-west while odd-numbered routes would run north-south. The U.S. highway numbering system continues in use (although no new numbers were added after 1956) and laid the framework for the modern interstate freeway network (Hokanson 1999). The route numbering system for the interstate system is the opposite of the U.S. highway system.

In 1964, the California Division of Highways began a major campaign to modernize the highway system in California. The first step in this process was, again, to provide consistent numbering for the state's highways. In addition to renumbering existing highways in California, the Division of Highways designated additional roads as part of the state highway system network. Many existing roads were upgraded to highway status, given a state route number, and improved to meet California State Highways standards.

3.5 Transmission Line Context

The following broad historical overview of electric transmission is included to provide a sense of the historical developments, techniques, and significant events associated with electric transmission systems. Specific historical accounts and important information about electric transmission systems are often not documented in the historical record because these types of systems primarily serve a utilitarian function and their historical developments through time are linked to the service they provide. In order to assess whether or not a specific electric transmission line is relevant within the historical developments of these types of utilities, it is important to identify the major significant events of electric transmission, important companies, and other developments through time in addition to the property specific information identified during focused archival research.

3.5.1 Early Electric Transmission

Stephen Gray is generally credited with discovering electric transmission in the 1700s (Adams 2010). Gray originally transmitted electricity vertically because, at the time, there was no way to prevent the electric charge from transmitting down the electrical supports. In other words, insulators were not invented yet. Eventually, with the help of wealthy scientist Granville Wheler, Gray was able to transmit electricity horizontally using silk thread to hold the wire. Utilizing this method, Gray and Wheler were able to transmit an electric current several hundred feet, which led to many breakthroughs in electric transmission during the following years (Adams 2010).

The telegraph is one of the most important inventions in the development of electric transmission systems because it required the use of long-range transmission lines to transmit a message. Many versions of the telegraph were invented between 1749 and 1837 when Samuel Morse first demonstrated his new version (Adams 2010). Morse's telegraph allowed a user to transmit a message, in the form of electrical impulses that triggered a pencil on the receiving end to draw a series of dots and lines, over a maximum distance of approximately 10 miles (Meyers 1972). It was not long after Morse's improvement to the telegraph that the federal government became involved in electric transmission. In 1843, Congress passed a bill appropriating $30,000 to Samuel Morse to build a telegraph line connecting Washington and Baltimore (Meyers 1972). The transmission line was originally designed to be underground, but difficulties in welding the conduit pipes together without destroying the conductor wire led to a halt in the project. Eventually, Morse and his associates decided to stand the pipes, which were originally designed to act as conduits underground, and erect and align them with the Baltimore and Ohio Railroad right-of-way. Morse then installed insulators around the conductors and strung the wire across the poles. The completion of this line in 1844 marked the first long-distance overhead electric transmission line in the United States (Meyers 1972).

3.5.2 Electric Transmission in California

The number of electric utility companies in California significantly increased in the 1880s to meet the demand of the growing population and widespread use of Thomas Edison's new version of the incandescent light bulb (Adams 2010). Electric utility companies prior to the 1880s typically used low-voltage direct currents (DC), also invented by Edison, which transmitted electricity only about three miles.

Since the electricity could not travel a long distance, only urban, densely populated areas could economically be served by these electric companies. Despite the limitations of DC systems, the California Electric Light Company of San Francisco was the first to begin installing long-distance electric transmission lines in California in 1879 (Adams 2010).

The alternating current (AC) system was developed later by Nikola Tesla and William Stanley (of the Westinghouse Company) and was more powerful than the DC system with the capability of transmitting higher voltages of electricity a significantly further distance (Adams 2010). California first saw use of the AC system when electrical engineer Almerian Decker and his partners opened the San Antonio Light and Power Company and in 1892 transmitted electricity over 14 miles in Pomona (JRP 2007). In 1895 the Folsom power plant, designed by James Lighthipe of General Electric, produced and transmitted power to Sacramento approximately 22 miles away (JRP 2007). By the end of the 1890s, several cities in California began to use AC systems in their power plants because of the capability to transmit electricity longer distances. Another new invention in electrical transmission and distribution was the "converter", also called the transformer. Transformers are designed to reduce high electrical voltages passing along transmission lines to lower voltages to be safely distributed to residences or businesses (Adams 2010).

Electric transmission lines throughout California continued to grow in length significantly into the twentieth century. In 1899, the Edison Electric Company, predecessor of Southern California Edison (SCE), used glazed porcelain insulators to hold the conductor wire, which allowed construction of an 83-mile-long electric transmission line from the Santa Ana River to Los Angeles, which was the longest line at the time (Adams 2010). The length of electric transmission lines continued to increase over the next decade. In 1901, the Bay Counties Power Company constructed a 142-mile-long electric transmission line from the Colgate Powerhouse in the Sierra Nevada to Oakland. John Debo Galloway was the engineer who designed the 142-mile-long transmission line, which is given credit for being the longest in the world at the time. Galloway was a major pioneer in the design of electric transmission lines in California (Adams 2010).

4.0 METHODS

4.1 Personnel Qualifications

All phases of the cultural resources investigation were conducted or supervised by Registered Professional Archaeologist (RPA) Dr. Roger Mason, who meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historical archaeologist. Fieldwork was conducted by Staff Archaeologist and Field Director Robert Cunningham. This report was prepared by Staff Archaeologist Robert Cunningham and Senior Archaeologist Wendy Blumel, RPA.

Dr. Mason has been professionally involved with cultural resources management in California since 1983. Dr. Mason is the author of hundreds of reports dealing with cultural resource surveys, evaluations, and mitigation programs in California. He has extensive project experience with the cultural resources requirements of CEQA and Section 106 of the NHPA.

Ms. Blumel is a RPA with 10 years of experience in cultural resource management. She meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historical archaeologist and is

experienced in the organization and execution of field projects in compliance with Section 106 of the NHPA and CEQA. She has contributed to and authored numerous cultural resources technical reports, research designs, and cultural resource management plans, and has contributed to a variety of environmental compliance documents.

Mr. Cunningham is a Staff Archaeologist for ECORP and has more than 10 years of experience in cultural resources management, primarily in Southern California. He holds a BA degree in Anthropology and has participated in and supervised numerous survey, testing, and data recovery excavations for both prehistoric and historical sites, and has cataloged, identified, and curated thousands of artifacts. He has conducted evaluations of cultural resources for eligibility for the NRHP and CRHR.

4.2 County Records Search Information

Prior to the field survey, San Bernardino County Department of Public Works provided information to ECORP regarding previously recorded resources in the project vicinity. The purpose of the records search was to determine the extent of previous cultural resources investigations and the presence of previously recorded archaeological sites or historic-period (i.e., over 50 years in age) resources within a one-mile (1,600-meter) radius of the Project Area. Materials reviewed included reports of previous cultural resources investigations, archaeological site records, historical maps, and listings of resources on the NRHP, CRHR, California Points of Historical Interest, California Landmarks, and National Historic Landmarks.

Historic maps reviewed include:

- 1955 USGS Joshua Tree, California (15-minute scale)
- 1972 USGS Joshua Tree North, California (7.5-minute scale)
- 1978 USGS Joshua Tree North, California (7.5-minute scale)

Historic aerial photos taken in 1952, 1967, 1970, 1989, 1994, and 1995 to present were also reviewed for any indications of property usage and built environment (Nationwide Environmental Title Research 2019, University of California Santa Barbara [UCSB] Library 2019).

4.3 Sacred Lands File Coordination Methods

A search of the Sacred Lands File by the NAHC in Sacramento, California, was requested by ECORP in May 2019. This search was requested to determine whether there are sensitive or sacred Native American resources in the vicinity of the Project Area that could be affected by the proposed Project. The NAHC was also asked to provide a list of Native American groups that have historic or traditional ties to the Project Area who may have knowledge about the Project Area. It should be noted that this does not constitute consultation in compliance with Senate Bill (SB) 18 or Assembly Bill (AB) 52. A copy of all correspondence between ECORP and the NAHC is attached (Attachment A).

Tribal Cultural Resources are defined in Section 21074 of the California Public Resources Code as sites, features, places, cultural landscapes (geographically defined in terms of the size and scope), sacred places, and objects with cultural value to a California Native American tribe that are either included in or

determined to be eligible for inclusion in the CRHR, or are included in a local register of historical resources as defined in subdivision (k) of Section 5020.1, or are 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 Section 5024.1. Section 1(b)(4) of AB 52 established that only California Native American tribes, as defined in Section 21073 of the California Public Resources Code, are experts in the identification of Tribal Cultural Resources and impacts thereto. Because ECORP does not meet the definition of a California Native American tribe, this report only addresses information for which ECORP is qualified to identify and evaluate, and that which is needed to inform the cultural resources section of CEQA documents. This report, therefore, does not identify or evaluate Tribal Cultural Resources. Should California Native American tribes ascribe additional importance to or interpretation of archaeological resources described herein, or provide information about non-archeological Tribal Cultural Resources, that information is documented separately in the AB 52 tribal consultation record between the tribe(s) and lead agency, and summarized in the Tribal Cultural Resources section of the CEQA document, if applicable.

4.4 Field Methods

Archaeological field work was conducted by an ECORP archaeologist on May 7, 2019 and consisted of an intensive systematic pedestrian survey. The Project Area was examined for the presence of cultural artifacts and features by walking along the east and west sides of the 1,600-foot segment of Sunburst Avenue (the Project Area). Notes and photographs were taken on the environmental setting and disturbances within the Project Area.

Newly-discovered cultural resources were assigned a unique temporary number based on the project name and the order in which they were found (i.e., SB-001). As appropriate, the site boundary, features, and artifacts were mapped using Collector for ArcGIS, a cloud-based geospatial software with two- to five-meter accuracy, with data later post-processed for submeter accuracy. Digital photographs were taken of select artifacts and features as well as general site overviews showing the general environment and the presence, if any, of human or naturally occurring impacts. Following fieldwork, Department of Parks and Recreation (DPR) 523 records were prepared for each of the resources identified and location and sketch maps were created using data collected with the Collector ArcGIS application used in the field. All DPR 523 records and maps prepared by ECORP are located in confidential Attachment C.

Previously recorded cultural resources located within the Project Area were revisited to assess any changes including man-made or naturally occurring disturbance and/or damage. Digital photographs were taken and features were mapped using Collector for ArcGIS. Previously recorded sites were updated to note any changes since the site had been originally recorded using DPR 523 Continuation Sheets (see Attachment C).

5.0 RESULTS

5.1 County Records Search Information

The records search consisted of a review of previous research and literature, records on file with the SCCIC for previously recorded resources, historical aerial photographs, and historical maps of the vicinity.

5.1.1 Previous Research

The records search results provided to ECORP by the County indicated that 16 cultural resources studies have been conducted within a one-mile radius of the Project Area between 1974 and 2013. Of these, four studies overlapped portions of the Project Area (Suss 1974; San Bernardino County Museum Association 1975; Bray 2009; Puckett 2013). Details of all 16 investigations are presented in Table 2.

Table 2. Previous Cultural Studies In or Within One Mile of the Project Area

Report Number SB-	Author(s)	Report Title	Year	Includes Portion of the Project Area?
00239	Suss, Terry	*Joshua Basin County Water District Improvements, Environmental Impact Report, Historical – Archaeological.*	1974	Yes
00255	San Bernardino County Museum Association	*Historic Resources Evaluation For The Wayne A. Clark, Specific Plan, Joshua Tree.*	1975	Yes
00436	Hearn, Joseph E.	*Archaeological - Historical Resources Assessment for Joshua Tree Park And Recreation District Projects.*	1976	No
00471	Hearn, Joseph E.	*Archaeological - Historical Resources Assessment of ten Acre Parcel, No. 602-381-10, Joshua Tree Area.*	1977	No
00478	Hearn, Joseph E.	*Archaeological - Historical Resources Assessment of Quail Wash (Coyote Creek) Channel Project.*	1977	No
01137	Lerch, Michael K.	*Cultural Resources Assessment of the Sunset Housing Project, Morongo Basin Retirement Housing Association.*	1981	No
02147	Heizer, Robert F. And C.W. Clewlow, Jr.	*Prehistoric Rock Art of California.*	1973	No
02147	Unknown	*Chambers Well CA-SBR-280 Supplemental Documentation and Notes.*	n.d.	No
03382	Love, Bruce	*Copper Mtns Basin Water Treatment Facilities, Joshua Basin Water District, San Bernardino, Ca.*	1999	No
04481	Sylvia, Barbara	*HPSR For Minor Widening Of SR 62 Between Sunny Vista Road & Hallee Road, Town Of Joshua Tree, San Bernardino County, Ca.*	2003	No
05360	Wetherbee, Matthew	*Historical/Archaeological Resources Survey Report Joshua Basin Water District Well 17 Alternative Project Joshua Tree Area San Bernardino County, California.*	2005	No
05963	Tsunoda, Koji	*Archaeological Survey Report for Southern California Edison Company Deteriorated Pole Replacement Program for Pole #A13721271E on Private Land (WO#4750-0081, JO#2144) and Pole #A13721477E on Public Land Managed by San Bernardino Flood Control (WO#4750-0081, JO#2145), on the Devers-High Desert-Terawind-Yucca 115kV Circuit, San Bernardino County, California.*	2008	No
06257	Bray, Madeleine	*Phase I Archaeological Assessment Of Approximately 160 Acres for the Joshua Basin Project, San Bernardino County, California.*	2008	No
06389	No data	No data	No data	No

Table 2. Previous Cultural Studies In or Within One Mile of the Project Area

Report Number SB-	Author(s)	Report Title	Year	Includes Portion of the Project Area?
07078	Bray, Madeleine	*Updated Phase I Cultural Resources Assessment for the Joshua Basin Water District Recharge Basin and Pipeline Project, Joshua Tree, San Bernardino County (CA).*	2009	Yes
07683	Puckett, Heather	*Bonair, 6225 Sunburst Street, Joshua Tree, California 92252.*	2013	Yes

The records search also determined that 39 previously recorded historic-period cultural resources are located within one mile of the Project Area. Of these 39 previously recorded resources, two are located within the Project Area. These consist of a segment of historic-period Sunburst Avenue (P36-024659/CA-SBR-15700H) and a historic-period GLO Survey marker (P36-020672). The remaining 37 resources are comprised of eight pre-contact resources and 29 historic-period resources. Pre-contact resources consist of the Coyote Hole Spring Site; a site comprised of a lithic scatter, pottery sherds, and a metate; a ceramic scatter site; and five lithic scatters. Historic-period resources consist of the Joshua Tree Historic Commercial District and 13 commercial buildings, 12 historic-period road alignments, two historic houses/house remnants, and the remnants of a historic homestead. Details of all 39 previously recorded resources in or within one mile of the Project Area are presented in Table 3.

Table 3. Previously Recorded Cultural Resources In or Within One Mile of the Project Area

Site Number CA-SBR-	Primary Number P-36-	Age/ Period	Site Description	Within Project Area?
004408H	004408	Historic	House Remnant	No
000216	000216	Pre-contact	Coyote Hole Spring Site (petroglyphs, pictographs, lithic scatters, quartzite choppers, milling features, ceramic scatters, rock circles, rock shelters)	No
000273	000273	Pre-contact	Joshua Tree Pottery Scatter	No
010517H	010517	Historic	Homestead (foundation, refuse deposits)	No
N/A	020666	Pre-contact	Lithic Flake (poss. andesite)	No
N/A	020667	Pre-contact	Lithic Flake (poss. andesite)	No
N/A	020668	Pre-contact	Lithic Flake (poss. andesite)	No
N/A	020672	Historic	GLO Quarter Section Marker	Yes
N/A	023554	Historic	Joshua Tree Historic Commercial District	No
N/A	023555	Historic	Historic Commercial Building	No

Table 3. Previously Recorded Cultural Resources In or Within One Mile of the Project Area

Site Number CA-SBR-	Primary Number P-36-	Age/ Period	Site Description	Within Project Area?
N/A	023556	Historic	Historic Commercial Building	No
N/A	023557	Historic	Historic Commercial Building	No
N/A	023558	Historic	Historic Commercial Building	No
N/A	023559	Historic	Historic Commercial Building	No
N/A	023560	Historic	Historic Commercial Building	No
N/A	023561	Historic	Historic Commercial Building	No
N/A	023562	Historic	Historic Commercial Building	No
N/A	023563	Historic	Historic Residence	No
N/A	023564	Historic	Historic Commercial Building	No
N/A	023565	Historic	Building Complex (Rental Duplexes and Manager's Residence)	No
N/A	023566	Historic	Historic Commercial Building	No
N/A	023567	Historic	Historic Commercial Building	No
N/A	024648	Historic	Outpost Road	No
015690H	024649	Historic	Bonair Road	No
015691H	024650	Historic	Historic Two-Track Road Segment ("Center Avenue")	No
N/A	024653	Historic	Grand View Circle (Road)	No
N/A	024654	Historic	El Reposo Street	No
N/A	024657	Historic	Valley View Circle (Road)	No
N/A	024658	Historic	Mountain View Circle (Road)	No
015700H	024659	Historic	Sunburst Circle/Sunburst Avenue (Road)	Yes
N/A	024662	Historic	Hallee Road	No
N/A	024667	Historic	Center Street	No
N/A	024673	Historic	Sunset Road	No
N/A	024674	Historic	Veterans Way	No
N/A	024675	Historic	Park Boulevard	No
N/A	027745	Pre-contact	Lithics, pottery sherds, metate	No
N/A	030078	Historic	Historic Commercial Building	No
N/A	060142	Pre-contact	Lithic Core	No

Table 3. Previously Recorded Cultural Resources In or Within One Mile of the Project Area				
Site Number CA-SBR-	Primary Number P-36-	Age/ Period	Site Description	Within Project Area?
N/A	060143	Pre-contact	Lithic Debitage	No

A review of the historic-period maps and historic aerial photographs indicates that a majority of the Project Area was undeveloped desert with scattered rural residences from the 1950s to 2000s. The earliest USGS 15-minute Joshua Tree Quadrangle map (1955) shows that there were few dwellings located along Sunburst Avenue. The road is shown as paved from Twentynine Palms Highway (SR-62) up to the intersection of Sunburst Avenue and Plaza Road. North of this point, Sunburst Avenue continues as an unpaved road. Most of the development in the area is depicted southwest of the Project Area. The community of Joshua Tree is identified on the map, and Yucca Valley is depicted to the west. In the 1972 USGS 7.5-minute Joshua Tree North Quadrangle map the entire segment of Sunburst Avenue within the Project Area is shown as a paved road. Additional dwellings are depicted along Sunburst Avenue, particularly along the western edge of the southern portion of Sunburst Avenue. Sportsman Park and an elementary school are now depicted along the eastern side of Sunburst Avenue, and Calle Los Amigos is depicted as an unpaved road. Twentynine Palms Highway is now identified as SR-62. New residential development in the community of Joshua Tree is depicted to the west and southwest. These conditions remain unchanged in the 1978 and 1994 USGS 7.5-minute Joshua Tree North Quadrangle maps.

On historic aerial photographs from 1952, Sunburst Avenue is shown as an unpaved road north of SR-62. This southern section of Sunburst Avenue terminates at the east-to-west trending drainage that crosses through the area. To the west, an unpaved segment of Valley View Street follows a path along the east-facing foot of Bartlett Mountain and eventually follows an alignment similar to that of the northern portion of present-day Sunburst Avenue. In a 1968 aerial photograph, Sunburst Avenue is shown in its present-day alignment and the road is paved. Sportsman Park and the elementary school are visible along the east side of Sunburst Avenue, and an east-to-west trending transmission line crosses through the Project Area, following the southern edge of the east-to-west trending drainage (UCSB Library 2019). These conditions remain unchanged in aerial photographs from 1970. Aerial photographs from 1989, 1995, 2005, and 2010 show increased rural residential development along Sunburst Avenue. Construction of a new school near the intersection of Sunburst Avenue and Calle Los Amigos is visible in aerial photographs from 2012 (Nationwide Environmental Title Research 2019).

5.2 Sacred Lands File Results

The results of the Sacred Lands File records search were negative, indicating no record for the presence of Native American Sacred Lands within the Project Area. The NAHC also provided a list of eight Native American groups that have historic or traditional ties to the Project Area who may have knowledge about the Project area. It should be noted that this does not constitute consultation in compliance with SB 18 or AB 52. A copy of all correspondence between ECORP and the NAHC is attached (Attachment A).

5.3 Field Visit Results

On May 7, 2019 an ECORP archaeologist performed a pedestrian survey of the Project Area by walking the entire length of the Project Area, along the east and west sides of Sunburst Avenue. The majority of the Project Area appeared highly disturbed by rural residential development, road shoulder maintenance, and construction of a bike path along the east side of Sunburst Avenue from SR-62 to the elementary school near the intersection of Sunburst Avenue and Oleander Drive. Ground visibility for the majority of the Project Area is good (approximately 95 percent). The majority of the Project Area also contains a light scatter of modern refuse including plastics, bottle glass, and non-diagnostic metal fragments.

As a result of the field survey, two historic-period resources (SB-001, SB-002) were recorded. In addition, the two previously recorded resources in the Project Area, a segment of historic-period Sunburst Avenue (P36-024659/CA-SBR-15700H) and a historic-period GLO survey marker (P36-020672) were field checked and updated. DPR 523 records for all four resources can be found in Attachment C. No pre-contact sites or isolated finds, and no historic-period isolated finds were identified during the field survey.

5.3.1 Newly Identified Resources

SB-001 is a 1.93-mile segment of a north-to-south trending utility distribution line located along the east side of Sunburst Avenue. Twenty-two poles with historic-period date nails from the 1950s and 1960s were identified on this segment of the utility line. Several of the original poles have been replaced with modern wooden utility poles.

SB-002 is a 45-foot segment of the Hi Desert Leatherneck Yucca 115kV transmission line. This east-to-west trending segment of transmission line is first visible in aerial photographs from 1968 (UCSB Library 2019). This transmission line shares a pole with SB-001 at the point that SB-002 crosses Sunburst Avenue.

5.3.2 Previously Recorded Resources

P36-020672

This site was originally recorded in 2009 and was described as a GLO quarter section survey marker consisting of a bronze medallion affixed to a bent steel pipe (Brock 2009). The site location was revisited by an ECORP archaeologist on May 7, 2019. The ECORP archaeologist was unable to locate the marker. Since 2012 (the last year for which aerial photographs are available), Sunburst Avenue has been widened near a newly constructed school near the intersection of Sunburst Avenue and Calle Los Amigos. UTMs provided in the original site record place the marker within the newly widened segment of Sunburst Avenue. The ECORP archaeologist inspected the area and was unable to locate the marker, and it is believed that the marker was removed or paved over during the widening of Sunburst Avenue.

P36-024659/CA-SBR-15700H-Sunburst Circle/Sunburst Avenue

This site is a historic-period road segment originally recorded in 2011. The site was described as an asphalt paved road measuring approximately 29 feet wide. The road is identified as Sunburst Circle. Sunburst Circle is the name of the road south of SR-62; however, the original site record also included a 15-meter segment of Sunburst Avenue north of SR-62. The original record notes that the segment north

of SR-62 has paved shoulders. The segment recorded in the original site record consisted of the portions of the road within the SR-62 Caltrans 15-meter right-of-way (Trampier 2011).

An ECORP archaeologist revisited the site on May 7, 2019. This study covered a two-mile segment of the road from SR-62 north to Calle Los Amigos, and included the previously recorded 15-meter segment north of SR-62. Street signs indicate that the segment of road north of SR-62 is named Sunburst Avenue. The segment of road is paved with asphalt. A paved asphalt curb is present along the east side of the road, running from the intersection of SR-62 for 0.5 mile, terminating at an elementary school complex located on the east side of Sunburst Avenue. The majority of the west shoulder is unpaved for the length of the road of the segment. The north end of the segment contains modern improvements near a newly built school near the intersection of Sunburst Avenue and Calle Los Amigos. Improvements in this area consists of modern flood control improvements, and a paved curb and sidewalk located along the west road shoulder. The road has also been widened at this location.

A review of historic-period maps and aerial photographs indicate this segment of Sunburst Avenue was an unpaved road in 1952. Sunburst Avenue terminates at the east-to-west trending drainage that crosses through the area. To the west, an unpaved segment of Valley View Street follows a path along the east-facing foot of Bartlett Mountain and eventually follows an alignment similar to that of the northern portion of present-day Sunburst Avenue (UCSB Library 2019). In the 1955 USGS Joshua Tree 15-minute Quadrangle map, the road is shown as paved from Twentynine Palms Highway (SR-62) up to the intersection of Sunburst Avenue and Plaza Road. North of this point, Sunburst Avenue continues as an unpaved road. In a 1968 aerial photograph, Sunburst Avenue is shown in its present-day alignment and the entire segment in the Project Area is paved (UCSB Library 2019). On the 1972 USGS Joshua Tree North Quadrangle map, the road is identified as Sunset Avenue.

6.0 EVALUATION OF ELIGIBILITY

6.1 State Evaluation Criteria

Under state law (CEQA) cultural resources are evaluated using CRHR eligibility criteria in order to determine whether any of the sites are Historical Resources, as defined by CEQA. CEQA requires that impacts to historical resources be identified and, if the impacts would be significant, that mitigation measures to reduce the impacts be applied.

A Historical Resource is a resource that:

1. Is listed in or has been determined eligible for listing in the CRHR by the State Historical Resources Commission;
2. Is included in a local register of historical resources, as defined in PRC 5020.1(k);
3. Has been identified as significant in a historical resources survey, as defined in PRC 5024.1(g); or
4. Is determined to be historically significant by the CEQA lead agency [CCR Title 14, § 15064.5(a)].

In making this determination, the CEQA lead agency usually applies the CRHR eligibility criteria.

For this Project, only the fourth definition of a historical resource is applicable because there are no resources previously determined eligible or listed on the CRHR, there are no resources included in a local register of historical resources, and no resources identified as significant in a qualified historical resources survey.

The eligibility criteria for the CRHR are as follows [CCR Title 14, § 4852(b)]:

- It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the U.S.;
- It is associated with the lives of persons important to local, California, or national history.
- It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or
- It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

In addition, the resource must retain integrity. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association [CCR Title 14, § 4852(c)].

Historical buildings, structures, and objects are usually eligible under Criteria 1, 2, and 3 based on historical research and architectural or engineering characteristics. Archaeological sites are usually eligible under Criterion 4, the potential to yield information important in prehistory or history. An archaeological test program may be necessary to determine whether the site has the potential to yield important data. The CEQA lead agency makes the determination of eligibility based on the results of the test program. Cultural resources determined eligible for the NRHP by a federal agency are automatically eligible for the CRHR.

Impacts to a historical resource (as defined by CEQA) are significant if the resource is demolished or destroyed or if the characteristics that made the resource eligible are materially impaired [CCR Title 14, § 15064.5(a)].

6.2 Evaluation

Following is an evaluation of one previously recorded resource (P36-024659/CA-SBR-15700H) and two newly recorded resources (SB-001 and SB-002) for inclusion in the CRHR. Previously recorded resource P36-020672 was found to be no longer extant and is therefore not subject to evaluation.

6.2.1 P36-024659/CA-SBR-15700H-Sunburst Avenue

This is a two-mile segment of Sunburst Avenue from Twentynine Palms Highway (SR-62) to Calle Los Amigos, in the community of Joshua Tree. The segment is a paved, two-lane road. The road shoulders are mostly unpaved, with the exception of a 0.5-mile asphalt curb on the east side of the road running from SR-62 to an elementary school complex, and a 0.24-mile area containing flood control improvement, and concrete curbs and a sidewalk along the west side of the road, near the intersection of Sunburst Avenue and Calle Los Amigos.

As a result of archival research, this road was not identified in available historical documentation as having any significant historical associations. The road was originally developed for access to rural lands with no other significant purpose. No information was found to indicate any important or other historical significance or close association with the road. As such, the road is not associated with any specific historic event or activity and is, therefore, not eligible under CRHR Criterion 1.

Similarly, the lack of historical documentation for this resource makes it clear that no specific individuals or groups of people significant in history are linked with this road. The resource does not demonstrate any association with the lives of persons significant in history and is, therefore, not eligible under CRHR Criterion 2.

This resource is currently a paved road that follows the same historical alignment that it did when it was originally constructed prior to 1952. The original road was a dirt "light-duty" road that, through decades of maintenance and repairs, was extended north and converted to the paved road that it is today. The road as it was originally, including its years of maintenance and changes, and as it is now, does not have any significant historical associations and its historical use, construction, improvement, and maintenance is typical among roads. It is not uniquely artistic or designed with any distinctive engineering characteristics. Therefore, this road does not embody any distinctive characteristics of a type, period, or method of road construction, nor does it possess any artistic value. In addition, no archival evidence, or physical aspect of the road, indicates that the site represents the work of a master road engineer or specific construction crew or company. Therefore, this resource is not eligible under CRHR Criterion 3.

The information potential in historic roads lies in its alignment and route. This road was recorded relatively accurately in historical topographic maps and thus the information regarding its historical route is provided in the archival record. Furthermore, this site does not possess the potential for subsurface archaeological deposits, and, accordingly, was not tested. The road does not possess the potential to yield any additional information regarding the relationship or functionality of roads or provide any information that isn't already represented in the archival record and, therefore, is not eligible under CRHR Criterion 4.

In conclusion, P36-024659/CA-SBR-15700H, does not meet the eligibility criteria for inclusion in the CRHR as an individual resource and does not contribute to any known or potential district.

6.2.2 SB-001

This resource is a 1.93-mile segment of a north-to-south trending utility distribution line located along the east side of Sunburst Avenue. Twenty-two poles with historic-period date nails from the 1950s and 1960s were identified on this segment of the utility line. As a result of focused archival research, historical topographic map review, the earliest record for the distribution line is from 1968. Though it could be older, the distribution line first appears in historic aerial photographs from 1968. The line does not appear on the previous aerial photographs from 1952. Based upon a review of historic aerial photographs and the range of date nails observed in the field, it is likely the distribution line was constructed between 1952 and 1968.

The electric distribution line is not eligible under CRHR Criterion 1. The distribution line is not significantly associated with the initial development of electric transmission across California, but instead acts as an

expansion to existing electric transmission systems already in place. The expansion served as a way of sustaining a growing population in Joshua Tree and nearby communities, but it did not serve to increase the population or economic strength of the area. Additionally, the distribution line represents one of many electric distribution line systems in California that were built well after the initial period of the development of electric transmission systems, which was between 1890 and 1920. The distribution line is not related to the broad patterns of history associated with the development of electric transmission systems in the United States or California, or as part of the historical developments of SCE.

The electric distribution line is not eligible under CRHR Criterion 2 because focused archival research did not identify a specific individual or group of historical significance associated with the distribution line.

The distribution line is not eligible under CRHR Criterion 3 because the utility poles are of typical design and construction purposed to effectively transmit electricity from a substation and distribute it to area properties. They do not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possesses high artistic values. A number of engineers and designers likely collaborated on the construction of the distribution line. It does not appear that construction of the distribution line is associated with any individuals important to the development and construction of electric utility systems in the U.S. or California or Southern California Edison (SCE). The design, construction techniques, and equipment (e.g., transformers, guy wires, and insulators) used for construction and operation of the distribution line were in existence and operation throughout California and the U.S. for many years prior to the construction of the distribution line. The distribution line is designed to efficiently transmit electricity from a substation and distribute it to homes and properties. The distribution line and its associated poles do not include any unique features that exemplify that purpose other than the typical components already existing on the poles. The distribution line and its components represent standard design, engineering, and construction associated with distribution lines. None of the poles or other components of the distribution line are the best representatives or examples of a particular type of distribution line, pole design, or construction.

The distribution line is not eligible under CRHR Criterion 4 because the distribution line poles have no potential to yield important information. Research is adequate for the distribution line and did not leave any additional unanswered questions or research opportunities. Additional research would not likely provide any significantly new information regarding the distribution line. In addition, the segment of the line within the Project Area has been adequately recorded.

In conclusion, SB-001 (utility distribution line) does not meet the eligibility criteria for inclusion in the CRHR as an individual resource and does not contribute to any known or potential district.

6.2.3 SB-002 – Hi Desert Leatherneck Yucca 115kV Transmission Line (Segment)

This is an east-to-west trending segment of the Hi Desert Leatherneck Yucca 115kV transmission line. As a result of focused archival research and historical topographic map review, the earliest record for the Hi Desert Leatherneck Yucca 115kV Line is from 1968. Though it could be older, the transmission line first appears in historic aerial photographs from 1968. The line does not appear on the previous aerial photographs from 1952, not does it appear on any USGS topographic maps of the area from 1953 to present. Therefore, it is likely the transmission line was constructed between 1952 and 1968.

SCE electric transmission lines are named based on their connection points. Hi Desert, Leatherneck, and Yucca are all SCE substations. This line was originally known as the Hi Desert Yucca Line but was changed after construction of the Leatherneck substation ca. 2013, when segments of the existing transmission line were used to tie in the Leatherneck substation to the SCE power grid (SCE 2011; Icari 2014). Though this portion of the transmission line may have been originally constructed prior to 1968, it no longer serves the same function nor does it supply the same areas. Its current function is as a double-circuit line, meaning the poles support two separate conductor wire systems that each transmits electricity to and from different locations.

The electric transmission line is not eligible under CRHR Criterion 1. The transmission line is not significantly associated with the initial development of electric transmission across California, but instead acts as an expansion to existing electric transmission systems already in place. The expansion served as a way of sustaining a growing population in Twentynine Palms and nearby communities, but it did not serve to increase the population or economic strength of the area. Additionally, the transmission line represents one of many electric transmission line systems in California that were built well after the initial period of the development of electric transmission systems, which was between 1890 and 1920. The transmission line is not related to the broad patterns of history associated with the development of electric transmission systems in the U.S. or California, or as part of the historical developments of SCE.

The electric transmission line is not eligible under CRHR Criterion 2 because focused archival research did not identify a specific individual or group of significance associated with the transmission line.

The transmission line is not eligible under CRHR Criterion 3 because the utility poles are of typical design and construction purposed to effectively transmit electricity, and they do not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possesses high artistic values. A number of engineers and designers likely collaborated on the construction of the transmission line. It does not appear that construction of the transmission line is associated with any individuals important to the development and construction of electric transmission systems in the U.S. or California or SCE. The poles and their components were designed to fit the particular requirements of their specific location along the transmission line systems and included engineering considerations such as environmental setting and costs. The design, construction techniques, and equipment (e.g., conductors, guy wires, and insulators) used for construction and operation of the transmission line were in existence and operation throughout California and the U.S. for many years prior to the construction of the transmission line. The conductors, insulators, foundations, and ground wires used for each of the pole structures are standard construction. The transmission line is designed to efficiently transmit electricity. The transmission line and its associated poles do not include any unique features that exemplify that purpose other than the typical components already existing on the poles. The transmission line and its components represent standard design, engineering, and construction associated with transmission lines. None of the poles or other components of the transmission line are the best representatives or examples of a particular type of transmission line pole design or construction.

The transmission line is not eligible under CRHR Criterion 4 because the transmission poles have no potential to yield important information. Research is adequate for the transmission line and did not leave

any additional unanswered questions or research opportunities. Additional research would not likely provide any significantly new information regarding the transmission line. In addition, the segment of the line within the Project Area has been adequately recorded.

In conclusion, SB-002 (utility transmision line) does not meet the eligibility criteria for inclusion in the CRHR as an individual resource and does not contribute to any known or potential district.

7.0 SUMMARY AND RECOMMENDATIONS

A cultural resources investigation was conducted for the Sunburst Avenue Bike Trail Project, a two-mile linear project in the Community of Joshua Tree, San Bernardino County, California. Two previously recorded resources, a GLO quarter section marker (P36-020672), and Sunburst Avenue (P36-024659/CA-SBR-15700H), are located within the Project Area. In addition, two newly identified resources were recorded. SB-001 is a utility distribution line and SB-002 is the Hi Desert Leatherneck Yucca 115kV transmission line. Previously recorded resource P36-020672 was found to be no longer extant. The remaining resources (P36-024659/CA-SBR-15700H, SB-001, and SB-002) were evaluated for their eligibility for the CRHR and were found not eligible for inclusion in the CRHR. Because no Historical Resources as defined by CEQA were identified in the Project Area, the proposed Project would not result in impacts to Historical Resources.

Based on records search information and geologic maps of the area, there is a low potential to encounter subsurface archaeological material in the Project Area. The records search results information provided by the County indicate that eight pre-contact resources have been previously recorded within a one-mile radius of the Project Area; however, it is unknown if any of those resources contain subsurface deposits. Geologic maps of the area show that the Project Area contains recent and older Pleistocene quaternary alluvium. Older Pleistocene sediments would predate human occupation of the region. While recent Pleistocene sediments are contemporaneous with the earliest known human occupation of the region, sites within areas containing these sediments are typically located on the surface, with a significantly lower potential for subsurface cultural deposits. Holocene sediments are more likely to contain evidence of human occupation than Pleistocene sediments. Additionally, the area contains no bedrock outcrops and does not contain resources (e.g., rivers, lakes, mesquite stands) that would suggest that it was a likely location of resource procurement. Therefore, the potential to encounter prehistoric subsurface cultural deposits is considered to be low.

Although the archaeological sensitivity of the Project Area is considered to be low, there always remains some potential for ground-disturbing activities to expose previously unrecorded cultural resources. CEQA requires the lead agency to address any unanticipated cultural resource discoveries during Project construction. Therefore, ECORP recommends the following mitigation measures be adopted and implemented by the project proponent to reduce potential adverse impacts to less than significant.

If subsurface deposits believed to be cultural or human in origin are discovered during construction, all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeologist, shall be retained to evaluate the significance of the find, and shall have the authority to

modify the no-work radius as appropriate, using professional judgment. The following notifications shall apply, depending on the nature of the find:

- If the professional archaeologist determines that the find does not represent a cultural resource, work may resume immediately and no agency notifications are required.
- If the professional archaeologist determines that the find does represent a cultural resource from any time period or cultural affiliation, he or she shall immediately notify the lead federal agency (if applicable), the City, and applicable landowner. The agencies shall consult on a finding of eligibility and implement appropriate treatment measures, if the find is determined to be eligible for inclusion in the NRHP or CRHR. Work may not resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the site either 1) is not eligible for the NRHP or CRHR; or 2) that the treatment measures have been completed to their satisfaction.
- If the find includes human remains, or remains that are potentially human, the archaeologist shall ensure reasonable protection measures are taken to protect the discovery from disturbance (AB 2641). The archaeologist shall notify the San Bernardino County Coroner (per § 7050.5 of the Health and Safety Code). The provisions of § 7050.5 of the California Health and Safety Code, § 5097.98 of the California Public Resources Code, and AB 2641 will be implemented. If the Coroner determines the remains are Native American and not the result of a crime scene, the Coroner will notify the NAHC, which then will designate a Native American Most Likely Descendant (MLD) for the project (§5097.98 of the Public Resources Code). The designated MLD will have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (§ 5097.94 of the Public Resources Code). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (§ 5097.98 of the Public Resources Code). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the county in which the property is located (AB 2641). Work may not resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the treatment measures have been completed to their satisfaction.

The lead agency is responsible for ensuring compliance with these mitigation measures because damage to significant cultural resources is in violation of CEQA. Section 15097 of Title 14, Chapter 3, Article 7 of CEQA, *Mitigation Monitoring or Reporting*, "the public agency shall adopt a program for monitoring or reporting on the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects. A public agency may delegate reporting or monitoring responsibilities to another public agency or to a private entity which accepts the delegation; however, until mitigation measures have been completed the lead agency remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the program."

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LIST OF ATTACHMENTS

Attachment A – Sacred Lands File Coordination

Attachment B –Project Area Photographs

Attachment C – ***Confidential*** Cultural Resource Site Locations and Site Records

ATTACHMENT A

Sacred Lands File Coordination

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: 2019-076.001

County: San Bernardino

USGS Quadrangle Name: Joshua Tree North

Township: 1N **Range:** 6E **Section(s):** 24, 25

Company/Firm/Agency: ECORP Consulting, Inc.

Street Address: 215 N. 5th Street

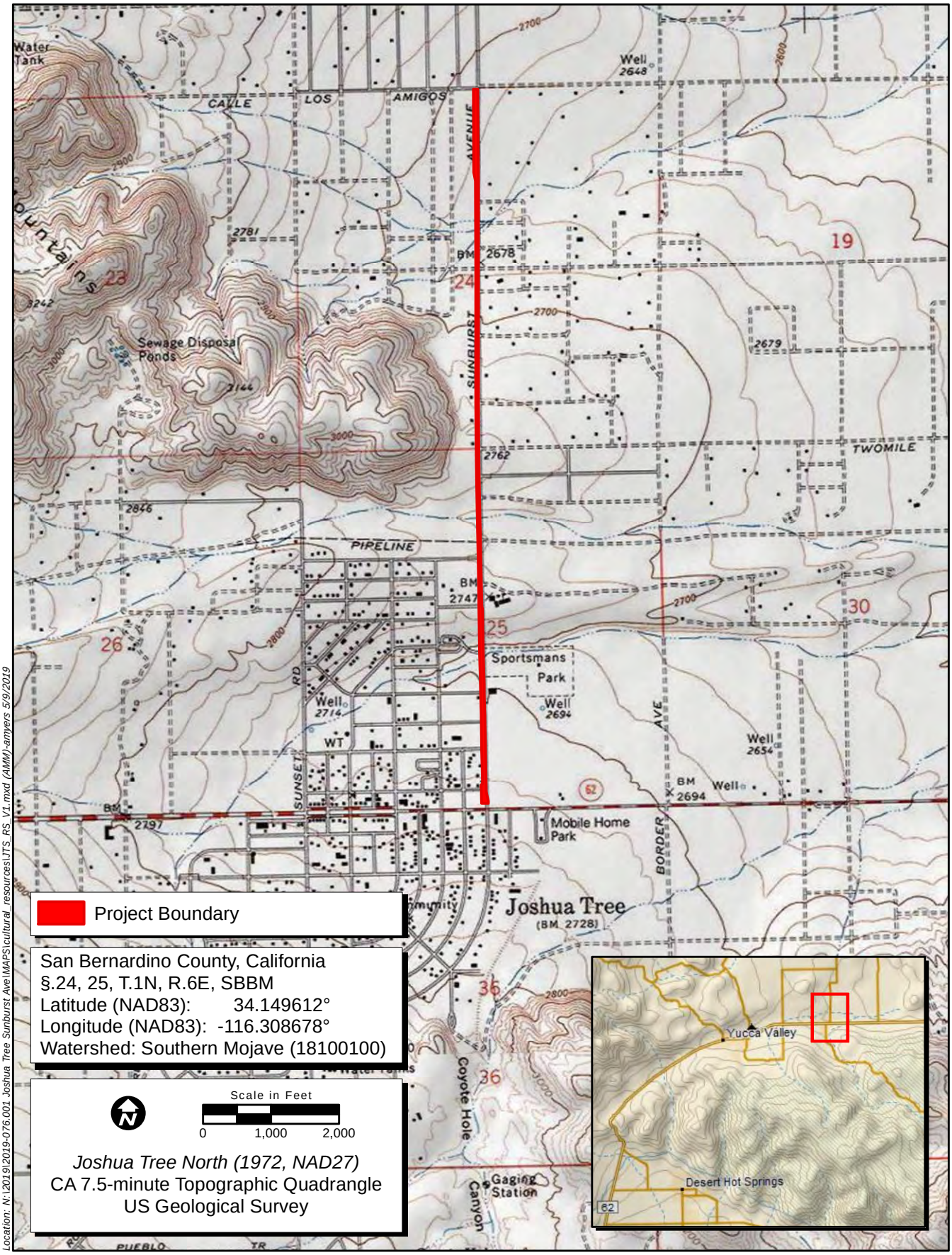
City: Redlands **Zip:** 92373

Phone: (909) 307-0046

Fax: (909) 307-0056

Email: rjcunningham@ecorpconsulting.com

Project Description: ECORP will conduct a cultural resources investigation for an approximately 2.0-mile linear area along Sunburst Avenue in the Community of Joshua Tree, San Bernardino County. This project is for the proposed construction of a bike lane and bike path along this segment of Sunburst Avenue.



Project Boundary

San Bernardino County, California
§.24, 25, T.1N, R.6E, SBBM
Latitude (NAD83): 34.149612°
Longitude (NAD83): -116.308678°
Watershed: Southern Mojave (18100100)

Scale in Feet
0 1,000 2,000

Joshua Tree North (1972, NAD27)
CA 7.5-minute Topographic Quadrangle
US Geological Survey

Location: N:\2019\2019-076.001 Joshua Tree Sunburst Ave\MAPS\cultural_resources\JTS_RS_V1.mxd (AMM)-amyers 5/9/2019

Map Date: 5/9/2019

iService Layer Credits: Copyright:© 2018 Garmin
Copyright:© 2013 National Geographic Society, i-cubed

DRAFT

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Records Search Map

2019-076.001 Joshua Tree Sunburst Ave

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

May 29, 2019

Robert Cunningham
ECORP

VIA Email to: rjcunningham@ecorpconsulting.com

RE: 2019-076.001 Project, San Bernardino County

Dear Mr. Cunningham:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: steven.quinn@nahc.ca.gov.

Sincerely,

Steven Quinn
Associate Governmental Program Analyst

Attachment

Native American Heritage Commission
Native American Contact List
San Bernardino County
5/29/2019

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Rroad — Cahuilla
Banning, CA, 92220 — Serrano
Phone: (951) 849 - 8807
Fax: (951) 922-8146
dtorres@morongo-nsn.gov

Morongo Band of Mission Indians
Denisa Torres, Cultural Resources Manager
12700 Pumarra Rroad — Cahuilla
Banning, CA, 92220 — Serrano
Phone: (951) 849 - 8807
Fax: (951) 922-8146
dtorres@morongo-nsn.gov

San Fernando Band of Mission Indians
Donna Yocum, Chairperson
P.O. Box 221838 — Kitanemuk
Newhall, CA, 91322 — Vanyume
Phone: (503) 539 - 0933 — Tataviam
Fax: (503) 574-3308
ddyocum@comcast.net

San Manuel Band of Mission Indians
Lee Clauss, Director of Cultural Resources
26569 Community Center Drive — Serrano
Highland, CA, 92346
Phone: (909) 864 - 8933
Fax: (909) 864-3370
lclauss@sanmanuel-nsn.gov

Serrano Nation of Mission Indians
Wayne Walker, Co-Chairperson
P. O. Box 343 — Serrano
Patton, CA, 92369
Phone: (253) 370 - 0167
serranonation1@gmail.com

Serrano Nation of Mission Indians
Mark Cochrane, Co-Chairperson
P. O. Box 343 — Serrano
Patton, CA, 92369
Phone: (909) 528 - 9032
serranonation1@gmail.com

Twenty-Nine Palms Band of Mission Indians
Darrell Mike, Chairperson
46-200 Harrison Place — Chemehuevi
Coachella, CA, 92236
Phone: (760) 863 - 2444
Fax: (760) 863-2449
29chairman@29palmsbomi-nsn.gov

Twenty-Nine Palms Band of Mission Indians
Anthony Madrigal, Tribal Historic Preservation Officer
46-200 Harrison Place — Chemehuevi
Coachella, CA, 92236
Phone: (760) 775 - 3259
amadrigal@29palmsbomi-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed 2019-076.001 Project, San Bernardino County.

ATTACHMENT B

Project Area Photographs

PHOTOLOG

Project Name: Sunburst Avenue Bike Trail

Project Number: 2019-076.001

Camera	Photo No.	Description	Facing	Date	Initials
C12-2	1782	SB-001, Detail of pole tag	East	5/7/2019	RJC
C12-2	1783	SB-001, Pole	South	5/7/2019	RJC
C12-2	1784	SB-001, date nail	East	5/7/2019	RJC
C12-2	1785	SB-001, Pole #2, detail of pole tag	North	5/7/2019	RJC
C12-2	1793	SB-001, overview from southern end	North	5/7/2019	RJC
C12-2	1795	Overview of project area from south end (Sunburst Avenue)	North	5/7/2019	RJC
C12-2	1798	Intersection Sunburst Ave/Commercial	North	5/7/2019	RJC
C12-2	1799	Intersection Sunburst Ave/Chollita	North	5/7/2019	RJC
C12-2	1800	Detail, Sunburst Ave. road shoulder	North	5/7/2019	RJC
C12-2	1801	Intersection Sunburst Ave/Verbena	North	5/7/2019	RJC
C12-2	1802	Intersection Sunburst Ave/Verbena	East	5/7/2019	RJC
C12-2	1803	Intersection Sunburst Ave/Plaza	North	5/7/2019	RJC
C12-2	1804	Intersection Sunburst Ave/Oleander	North	5/7/2019	RJC
C12-2	1805	Intersection Sunburst Ave/Hilltop	North	5/7/2019	RJC
C12-2	1806	Intersection Sunburst Ave/Crestview	East	5/7/2019	RJC
C12-2	1807	Intersection Sunburst Ave/Two Mile	North	5/7/2019	RJC
C12-2	1808	Project area from north end	South	5/7/2019	RJC
C12-2	1809	Sunburst Ave. road shoulder near Calle Los Amigos	South	5/7/2019	RJC
C12-2	1810	Intersection Sunburst Ave/Dennis, east side	South	5/7/2019	RJC
C12-2	1811	Intersection Sunburst Ave/Jericho	South	5/7/2019	RJC
C12-2	1812	Intersection Sunburst Ave/Cummins	South	5/7/2019	RJC
C12-2	1813	Intersection Sunburst Ave/Hacienda	South	5/7/2019	RJC
C12-2	1814	Intersection Sunburst Ave/Dennis, west side	North	5/7/2019	RJC
C12-2	1815	Improved road shoulder, west side of Sunburst Avenue near Calle Los Amigos	North	5/7/2019	RJC
C12-2	1816	P36-020672 Location paved over	North	5/7/2019	RJC
C12-2	1817	SB-001 overview from north	South	5/7/2019	RJC
C12-2	1818	SB-001 overview from north	South	5/7/2019	RJC
C12-2	1820	Bike path, east side of Sunburst Ave.	South	5/7/2019	RJC

IMG_1820

IMG_1782

IMG_1783

IMG_1784

IMG_1785

IMG_1793

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ATTACHMENT C

Attachment C – ***Confidential*** Cultural Resource Site Locations and Site Records

Appendix E – Noise Impact Assessment

Sunburst Avenue Bike Trail Project

Noise Impact Assessment

San Bernardino County, California

Prepared For:

COUNTY OF SAN NERNARDINO
DEPARTMENT OF PUBLIC WORKS
825 E. THIRD STREET
SAN BERNARDINO, CA 92415

June 2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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1.0 INTRODUCTION

This report documents the results of a Noise Impact Assessment completed for the proposed Sunburst Avenue Bike Trail Project (Project). This includes the design and rehabilitation of an existing Class I bike path along with the design and construction of two new Class II bike lanes spanning two miles, from the intersection of Sunburst Avenue and State Route 62, in the unincorporated community of Joshua Tree, San Bernardino County (County). This report was prepared as a comparison of predicted Project noise levels to noise standards promulgated by the County of San Bernardino Development Code and the County's General Plan Noise Element. The purpose of this report is to estimate Project-generated noise and to determine the level of impact the Project would have on the environment.

1.1 Project Description and Location

The Project Site is located in the unincorporated community of Joshua Tree, located in southern San Bernardino County. The County proposes rehabilitation and construction of approximately 2 miles of bike lanes and paths spanning Sunburst Avenue from the intersection of Calle Los Amigos to State Route 62 (SR 62) for the purpose of accommodating an identified need for a non-vehicle trail to serve local residents in the community. Specifically, the Proposed Project would include the rehabilitation of the existing Class I bike path located along the east side of Sunburst Avenue from SR 62 north to Oleander Avenue, construction a new Class II bike lane on the east side of Sunburst Avenue from Oleander Avenue north to Calle Los Amigos, and constructing a new Class II bike lane on the west side of Sunburst Avenue from SR 62 north to Calle Los Amigos. The rehabilitation of the existing Class I bike path on the east side of Sunburst Avenue would include a 6.5-foot shoulder between Sunburst Avenue and the bike path, an 8-foot paved concrete bike path, and a two-foot shoulder along the eastern edge of the bike path. The new Class II bike lanes would be approximately four to five feet wide with two-foot shoulders on each side.

In general, construction activities associated with development of the trail would include excavation and grading; installation of signage; and painting of pavement striping and pavement markings.

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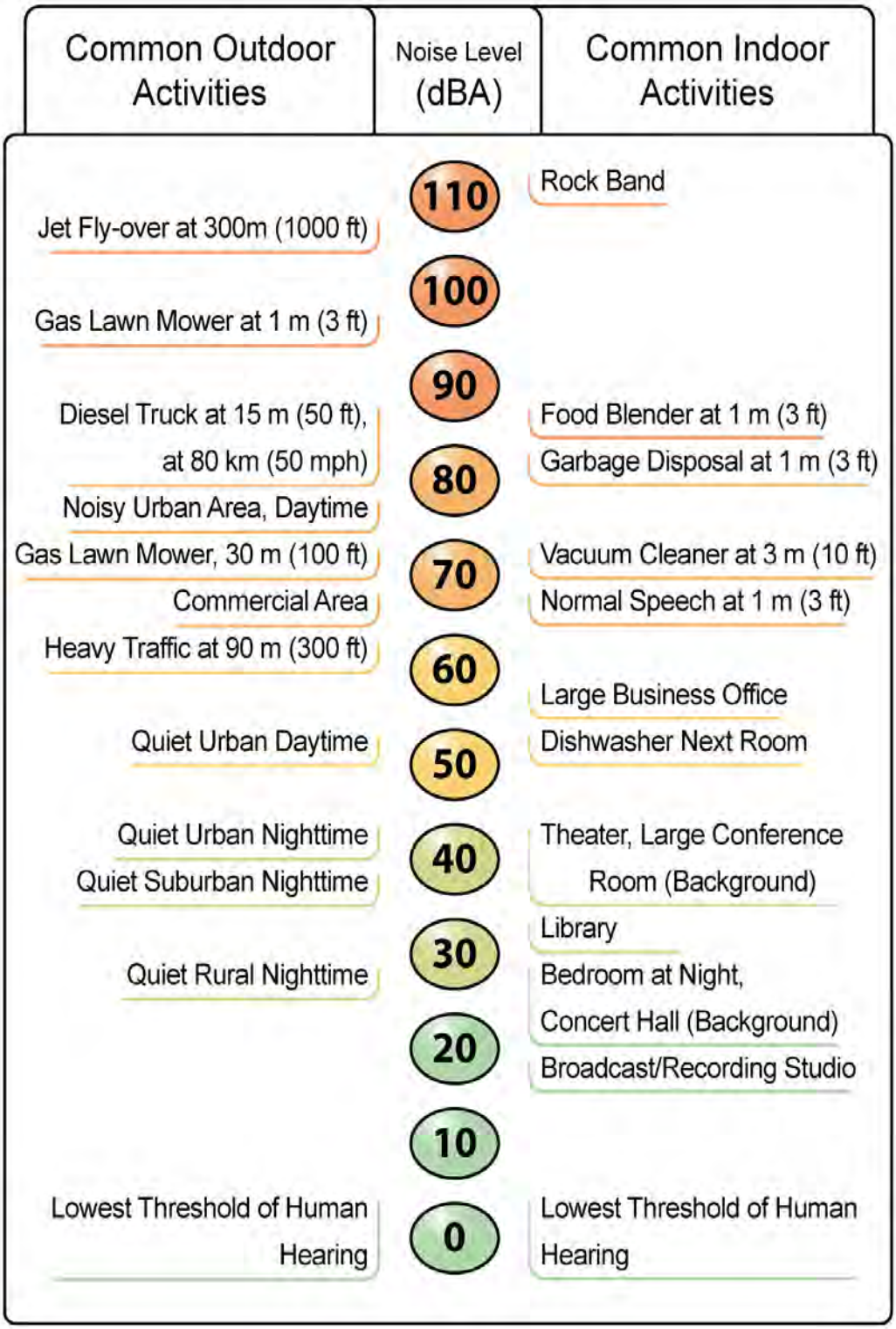
2.0 NOISE BACKGROUND

2.1 Fundamentals of Sound and Environmental Noise

Addition of Decibels

The decibel (dB) scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted (dBA), an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound and twice as loud as a 60-dBA sound. When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions (FTA 2018). For example, a 65-dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Under the decibel scale, three sources of equal loudness together would produce an increase of 5 dB.

Typical noise levels associated with common noise sources are depicted in **Figure 1**.



Source: Caltrans 2012

FIGURE 1. COMMON NOISE LEVELS

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Sound Propagation and Attenuation

Noise can be generated by a number of sources, including mobile sources, such as automobiles, trucks and airplanes, and stationary sources, such as construction sites, machinery, and industrial operations. Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics (FHWA 2011). No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. For line sources, an overall attenuation rate of 3 dB per doubling of distance is assumed (FHWA 2011).

Noise levels may also be reduced by intervening structures; generally, a single row of detached buildings between the receptor and the noise source reduces the noise level by about 5 dBA (FHWA 2006), while a solid wall or berm generally reduces noise levels by 10 to 20 dBA (FHWA 2011). However, noise barriers or enclosures specifically designed to reduce site-specific construction noise can provide a sound reduction 35 dBA or greater (WEAL 2000). To achieve the most potent noise-reducing effect, a noise enclosure/barrier must physically fit in the available space, must completely break the “line of sight” between the noise source and the receptors, must be free of degrading holes or gaps, and must not be flanked by nearby reflective surfaces. Noise barriers must be sizable enough to cover the entire noise source, and extend length-wise and vertically as far as feasibly possible to be most effective. The limiting factor for a noise barrier is not the component of noise transmitted through the material, but rather the amount of noise flanking around and over the barrier. In general, barriers contribute to decreasing noise levels only when the structure breaks the "line of sight" between the source and the receiver.

The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.

Noise Descriptors

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The L_{eq} is a measure of ambient noise, while the L_{dn} and CNEL (Community Noise Equivalent Level) are measures of community noise. Each is applicable to this analysis and defined as follows:

- **L_{eq} (Equivalent Noise Level**) is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.

- **L_{dn} (Day-Night Average**) is a 24-hour average L_{eq} with a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
- **CNEL (Community Noise Equivalent Level)** is a 24-hour average L_{eq} with a 5 dBA "weighting" during the hours of 7:00 p.m. to 10:00 p.m. and a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.

The A weighted decibel sound level scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance between the receptor and the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA). Regarding increases in A-weighted noise levels (dBA), the following relationships should be noted in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived by humans.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A change in level of at least 5-dBA is required before any noticeable change in community response would be expected. An increase of 5 dBA is typically considered substantial.
- A 10-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Effects of Noise on People

Hearing Loss

While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise.

The Occupational Safety and Health Administration (OSHA) has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over 8 hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. For ground vehicles, a noise level of about 55 dBA L_{dn} is the threshold at which a substantial percentage of people begin to report annoyance.

2.2 Fundamentals of Environmental Groundborne Vibration

Sources of earthborne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or man-made causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g., factory machinery) or transient (e.g., explosions).

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous

positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

Table 1 displays the reactions of people and the effects on buildings produced by continuous vibration levels. The annoyance levels shown in the table should be interpreted with care since vibration may be found to be annoying at much lower levels than those listed, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Ground vibration can be a concern in instances where buildings shake and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. Common sources for groundborne vibration are planes, trains, and construction activities such as earth-moving which requires the use of heavy-duty earth moving equipment.

Table 1. Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibration Levels

Peak Particle Velocity (inches/second)	Approximate Vibration Velocity Level (VdB)	Human Reaction	Effect on Buildings
0.006–0.019	64–74	Range of threshold of perception	Vibrations unlikely to cause damage of any type
0.08	87	Vibrations readily perceptible	Recommended upper level to which ruins and ancient monuments should be subjected
0.1	92	Level at which continuous vibrations may begin to annoy people, particularly those involved in vibration sensitive activities	Virtually no risk of architectural damage to normal buildings
0.2	94	Vibrations may begin to annoy people in buildings	Threshold at which there is a risk of architectural damage to normal dwellings
0.4–0.6	98–104	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Architectural damage and possibly minor structural damage

Source: Caltrans 2004

2.3 Existing Environmental Noise Setting

Noise Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

The Project site traverses numerous noise-sensitive land uses including multiple single-family residences and Joshua Tree Elementary School. The nearest noise-sensitive receptor to the Project site is a single-family residence located 25 feet to the west near the intersection of Sunburst Avenue and Commercial Street. However, there are numerous other residences existing directly adjacent to the Project site.

Existing Ambient Noise Environment

The noise environment in the Proposed Project area is impacted by various noise sources. Mobile sources of noise, especially cars and trucks traveling on Sunburst Avenue and SR 62, are the most common and significant sources of noise in Project area. Other sources of noise are typical activities associated with residential neighborhoods (barking dogs, lawnmowers, neighborhood automobile movements). The nearest active airport to the Project site is the Twentynine Palms Strategic Expeditionary Landing Field located approximately 12.5 miles northeast of the Project site.

3.0 REGULATORY FRAMEWORK

Federal

Occupational Safety and Health Act of 1970

The Federal Occupational Safety and Health Administration (OSHA) regulates on-site noise levels and protects workers from occupational noise exposure. To protect hearing, worker noise exposure is limited to 90 decibels with A-weighting (dBA) over an 8-hour work shift (29 Code of Regulations [CFR] 1910.95). Employers are required to develop a hearing conservation program when employees are exposed to noise levels exceeding 85 dBA. These programs include provision of hearing protection devices and testing employees for hearing loss on a periodic basis.

State

State of California General Plan Guidelines

The State of California regulates vehicular and freeway noise affecting classrooms, sets standards for sound transmission and occupational noise control, and identifies noise insulation standards and airport noise/land-use compatibility criteria. The State of California General Plan Guidelines (State of California

2003), published by the Governor's Office of Planning and Research (OPR), also provides guidance for the acceptability of projects within specific CNEL/L_{dn} contours. The guidelines also present adjustment factors that may be used in order to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

State Office of Planning and Research Noise Element Guidelines

The State Office of Planning and Research Noise Element Guidelines include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The Noise Element Guidelines contain a land use compatibility table that describes the compatibility of various land uses with a range of environmental noise levels in terms of the CNEL. **Table 2** presents guidelines for determining acceptable and unacceptable community noise exposure limits for various land use categories. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

Table 2. Land Use Compatibility for Community Noise Environments				
Land Use Category	Community Noise Exposure (CNEL)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential – Low Density, Single-Family, Duplex, Mobile Homes	50 – 60	55 – 65	65 – 75	75 – 85
Residential – Multiple Unit, Mixed Use	50 – 65	60 – 70	70 – 75	75 – 85
Lodging – Hotels	50 – 65	60 – 70	70 – 80	80 – 85
Schools, Libraries, Community Centers, Religious Institutions, Hospitals, Nursing Homes	50 – 70	60 – 70	70 – 80	80 – 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 – 70	65 – 85	NA
Sports Arenas, Outdoor Spectator Sports	NA	50 – 75	70 – 85	NA
Playgrounds, Neighborhood Parks	50 – 70	NA	67.5 –75	72.5 – 85
Outdoor Recreation (Commercial and Public)	50 – 75	NA	70 – 80	80 – 85
Office, Retail, and Commercial	50 – 70	67.5 – 77.5	N/A	75 – 85
Industrial, Manufacturing, Utilities, Agriculture	50 – 75	70 – 80	N/A	75 – 85

Source: Office of Planning and Research, California, General Plan Guidelines

Notes:

NA: Not Applicable; CNEL: Community Noise Equivalent Level

Normally Acceptable – Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable – New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice. Outdoor environment will seem noisy.

Normally Unacceptable – New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor areas must be shielded.

Clearly Unacceptable – New construction or development should generally not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.

Local

County of San Bernardino 2007 General Plan

The purpose of the San Bernardino County General Plan Noise Element is to limit the exposure of the community to excess noise levels. The Noise Element contains goals, policies, and programs the must be used to guide decisions concerning land uses that are common sources of excessive noise levels. The General Plan policies most applicable to the Proposed Project are included below.

Policy N 1.6: Limit truck traffic in residential and commercial areas to designated truck routes; limit construction, delivery, and through-traffic to designated routes; and distribute maps of approved truck routes to County traffic officers.

Policy N 2.1: The County will require appropriate and feasible on-site noise attenuation measures that may include noise walls, enclosure of noise generated equipment, site planning to locate noise sources away from sensitive receptors, and other comparable features.

County of San Bernardino Development Code

The County's Municipal Code (Title 8, Development Code; Division 3, Countywide Development Standards; Chapter 83.01, General Performance Standards, Section 83.01.080) sets interior and exterior noise standards for specific land users by type of noise source, stationary sources and mobile sources. Noise standards for stationary noise sources are summarized in **Table 3.** As shown, the noise standards for residential properties is 55 dBA L_{eq} from 7 a.m. to 10 p.m. and 45 dBA L_{eq} from 10 p.m. to 7 a.m. Areas exposed to noise levels exceeding these standards are considered noise impact areas.

Table 3. Noise Standards for Stationary Noise Sources

Affected Land Uses (Receiving Noise)	7 a.m.- 10 p.m. L_{eq}	10 p.m. to 7 a.m. L_{eq}
Residential	55 dB(A)	45 dB(A)
Professional Services	55 dB(A)	55 dB(A)
Other Commercial	60 dB(A)	60 dB(A)
Industrial	70 dB(A)	70 dB(A)

Source: County of San Bernardino Development Code, Section 83.01.080, Table 83-2.

Notes:

L_{eq} = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period, typically one, eight or 24 hours.

dB(A) = (A-weighted Sound Pressure Level). The sound pressure level, in decibels, as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitivity range of the human ear.

L_{dn} = (Day-Night Noise Level). The average equivalent A-weighted sound level during a 24-hour day obtained by adding 10 decibels to the hourly noise levels measured during the night (from 10:00 p.m. to 7:00 a.m.). In this way L_{dn} takes into account the lower tolerance of people for noise during nighttime periods.

The County's Development Code exempts noise from construction provided that construction is limited between the hours of 7 a.m. and 7 p.m. Monday through Saturday. Construction noise occurring on Sundays or federal holidays is not exempt.

4.0 IMPACT ASSESSMENT

Thresholds of Significance

Criteria for determining the significance of noise impacts were developed based on information contained in the CEQA Guidelines Appendix G. According to the guidelines, a project may have a significant effect on the environment if it would result in the following conditions:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

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

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

For purposes of this analysis and where applicable, the County of San Bernardino noise standards were used for evaluation of Project-related noise impacts.

Methodology

This analysis of the existing and future noise environments is based on noise prediction modeling and empirical observations. In order to estimate the worst-case construction noise levels that may occur at the nearest noise-sensitive receptors in the Project vicinity, predicted construction noise levels were calculated utilizing the Federal Highway Administration's Roadway Construction Model (2008).

Groundborne vibration levels associated with construction-related activities for the Project were evaluated utilizing typical groundborne vibration levels associated with construction equipment, obtained from the Caltrans guidelines set forth above. Potential groundborne vibration impacts related to structural damage and human annoyance were evaluated, taking into account the distance from construction activities to nearby land uses.

Impact Analysis

PROJECT CONSTRUCTION NOISE

Would the Project Result in Short-Term Construction-Generated Noise in Excess of Noise Standards?

Construction noise associated with the Proposed Project would be temporary and would vary depending on the nature of the activities being performed. Noise generated would primarily be associated with the operation of off-road equipment for on-site construction activities as well as construction vehicle traffic on area roadways. Construction noise typically occurs intermittently and varies depending on the nature

or phase of construction (e.g., demolition, grading, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). During construction, exterior noise levels could negatively affect sensitive receptors in the vicinity of the construction site.

Table 4 indicates the anticipated noise levels of construction equipment. The average noise levels presented in **Table 4** are based on the quantity, type, and acoustical use factor for each type of equipment that is anticipated to be used.

Table 4. Maximum Noise Levels Generated by Construction Equipment

Type of Equipment	Maximum Noise (L_{max}) at 50 Feet (dBA)	Maximum 8-Hour Noise (L_{eq}) at 50 Feet (dBA)
Crane	80.6	72.6
Dozer	81.7	77.7
Excavator	80.7	76.7
Generator	80.6	77.6
Grader	85.0	81.0
Paver	77.2	74.2
Roller	80.0	73.0
Tractor	84.0	80.0
Dump Truck	76.5	72.5
Concrete Pump Truck	81.4	74.4
Welder	74.0	70.0

Source: Federal Highway Administration, Roadway Construction Noise Model (FHWA-HEP-05-054), dated December 2008.

The nearest noise-sensitive land user to the Project site is a single-family residence located 25 feet to the west. Due to the close proximity, the residence will experience noise levels in excess of what is presented in **Table 4**.

The County does not promulgate numeric thresholds pertaining to the noise associated with construction but instead limits the time that construction can take place. Specifically, Section 83.01.080 expects noise form temporary construction, maintenance, repair or demolition activates between 7 a.m. and 7 p.m., except Sundays and Federal holidays. It is typical to regulate construction noise in this manner since construction noise is temporary, short term, intermittent in nature, and would cease on completion of the

Project. Therefore, noise generated during construction activities, as long as conducted within the permitted hours, would not exceed County noise standards.

PROJECT OPERATIONAL NOISE

Would the Project Result in a Substantial Permanent Increase in Ambient Noise Levels in Excess of Standards During Operations?

The Proposed Project consists of rehabilitation and construction of a bike path and lane. It would not be a source of mobile or stationary noise sources and thus would not be a source of operational noise.

PROJECT GROUNDBORNE VIBRATION

Would the Project Expose Structures to Substantial Groundborne Vibration During Construction?

Excessive groundborne vibration impacts result from continuously occurring vibration levels. Increases in groundborne vibration levels attributable to the Proposed Project would be primarily associated with short-term construction-related activities. Construction on the Project site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance.

Construction-related ground vibration is normally associated with impact equipment such as pile drivers, jackhammers, and the operation of some heavy-duty construction equipment, such as dozers and trucks (pile drivers are not necessary for the completion of the Project). Vibration decreases rapidly with distance and it is acknowledged that construction activities would occur throughout the Project site and would not be concentrated at the point closest to sensitive receptors. Groundborne vibration levels associated with construction equipment are summarized in **Table 5**.

Table 5. Representative Vibration Source Levels for Construction Equipment

Equipment Type	Peak Particle Velocity at 25 Feet (inches per second)
Large Bulldozer	0.089
Caisson Drilling	0.089
Rock Breaker	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer/Tractor	0.003

Source: Caltrans 2004

The nearest structure to the Project site is approximately 25 feet away. Based on the vibration levels presented in **Table 5**, groundborne vibration generated by construction equipment would not be anticipated to exceed 0.089 in/sec PPV at 25 feet. The County's Development Code Section 83.01.090 prohibits the operation of any device that creates vibration greater than or equal to 0.2. inches per second measured beyond the property line. The use of any construction equipment listed above would not result in a groundborne vibration velocity level above County standards. The predicted vibration levels at the nearest structures would not exceed County standards.

Would the Project Expose Structures to Substantial Groundborne Vibration During Operations?

Project operations would not include the use of any stationary equipment that would result in excessive vibration levels. Therefore, the Project would result in no groundborne vibration impacts during operations.

AIRPORT NOISE

Would the project Expose People Residing or Working in the Project Area to Excessive Airport Noise Levels?

The Project site is located approximately 12.5 miles northeast of the Twentynine Palms Strategic Expeditionary Landing Field. It is not within two miles of a public or private airport. Implementation of the Proposed Project would not affect airport operations nor result in increased exposure of noise-sensitive receptors to aircraft noise.

CUMULATIVE NOISE IMPACTS

Cumulative Construction Noise Impacts

Construction activities associated with the Proposed Project and other construction projects in the area may overlap, resulting in cumulative construction noise in the area. However, construction noise impacts primarily affect the areas immediately adjacent to the construction site. Construction noise for the Proposed Project was determined to be less than significant following compliance with the City's Municipal Code and General Plan Safety and Noise Chapter. Cumulative development in the vicinity of the Project site could result in elevated construction noise levels at sensitive receptors in the Project area. However, each project would be required to comply with the applicable County's limitations on allowable construction noise limits. Therefore, the Project would not contribute to cumulative impacts and impacts in this regard are not cumulatively considerable.

Cumulative Operational Noise Impacts

As previously discussed, once operational the Project would not be a source of operational noise.

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5.0 REFERENCES

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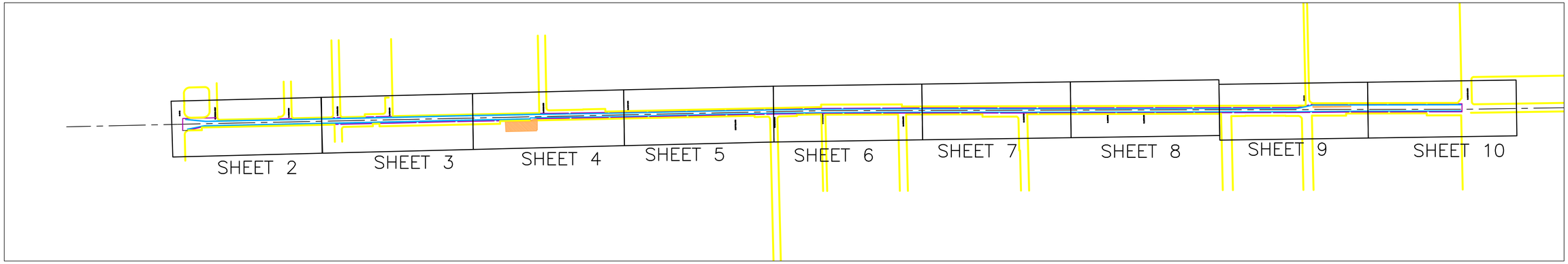
Appendix F – Site Plan



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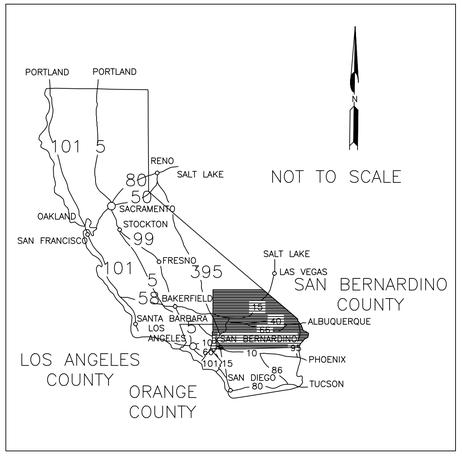

STATE LOCATION MAP

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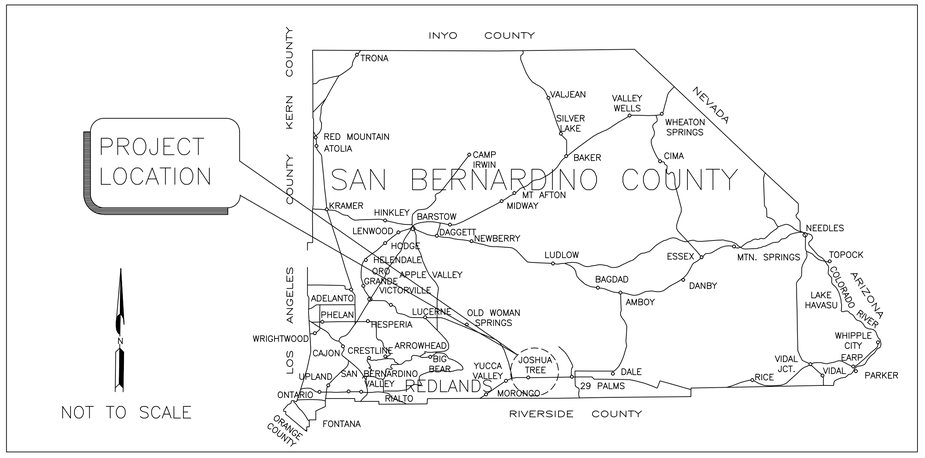

COUNTY LOCATION MAP

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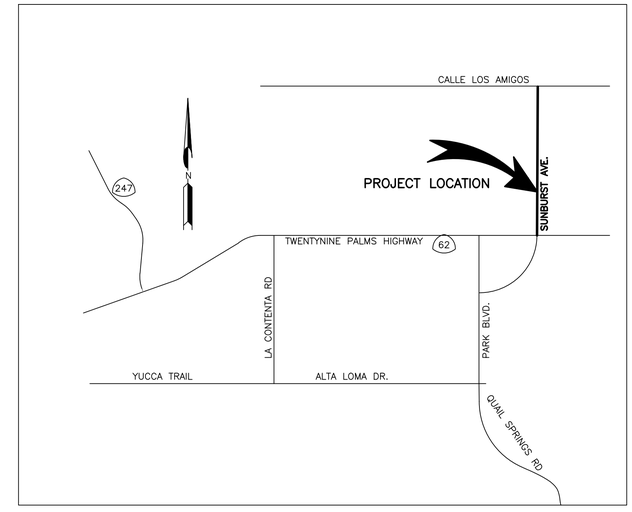

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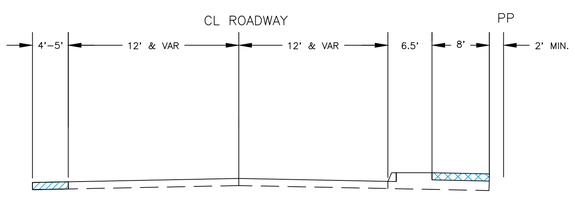
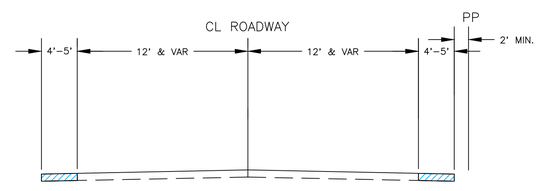


TYPICAL SECTION
FROM SH 62 TO 74' SOUTH OLEANDER DRIVE



TYPICAL SECTION
FROM 74' SOUTH OLEANDER DRIVE TO CALLE LOS AMIGOS

R/W & PROPERTY LINES

THIS MAP HAS BEEN COMPILED FROM RECORD DATA AND OTHER AVAILABLE MATERIAL AND DOES REPRESENT A FIELD SURVEY. NOTE: PROPERTY LINES ADJACENT TO STREETS AND ROADS DEFINE R/W BOUNDARIES.

CONSTRUCTION IMPACT AREA (CIA) MAPS

COUNTY OF SAN BERNARDINO
DEPARTMENT OF PUBLIC WORKS

SUBMITTED BY:

TRANSPORTATION DESIGN DIVISION

SUNBURST AVENUE
BIKE LANE
TWENTYNINE PALMS HIGHWAY (SH 62)
NORTH TO CALLE LOS AMIGOS
JOSHUA TREE AREA

J.L. REF.	W.O. NO.	PLAN SCALE	SHT. NO.	TOT. SHT'S.
JL 11661 JL 11662	H14976	NTS	1	10

MARK	REVISIONS	APPR.	DATE

MARK	REVISIONS	APPR.	DATE

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LEGEND

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- CONSTRUCT BIKE LANE
- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINES
- CENTERLINE SURVEY
- CONSTRUCTION LIMITS
- XXXX-XXX-XX — APN

N

GRAPHIC SCALE 1" =40'

0 40 80 120

CONSTRUCTION IMPACT AREA (CIA) MAPS

COUNTY OF SAN BERNARDINO
DEPARTMENT OF PUBLIC WORKS

SUBMITTED BY:

TRANSPORTATION DESIGN DIVISION

SUNBURST AVENUE BIKE LANE

TWENTYNINE PALMS HIGHWAY (SH 62)
NORTH TO CALLE LOS AMIGOS

JOSHUA TREE AREA

J.L. REF.	W.O. NO.	PLAN SCALE	SHT. NO.	TOT. SHT'S.
JL 11661 JL 11662	H14976	1" = 40'	2	10

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MARK	REVISIONS	APPR.	DATE

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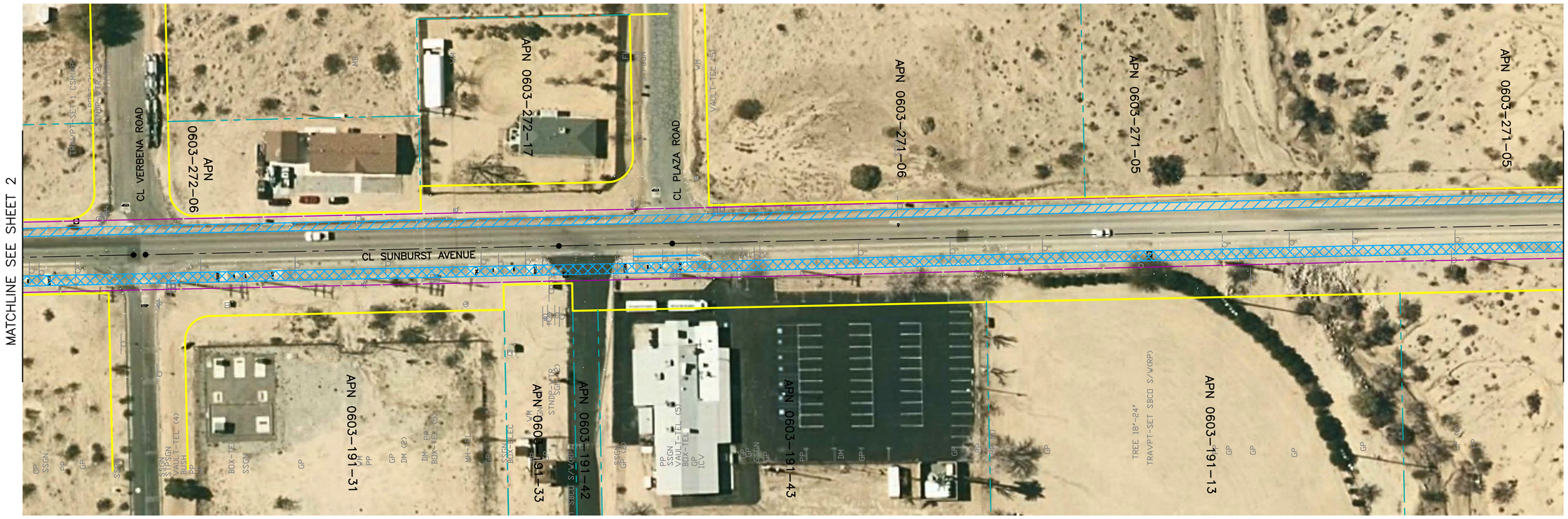

LEGEND

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- CONSTRUCT BIKE LANE
- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINES
- CENTERLINE SURVEY
- CONSTRUCTION LIMITS
- XXXX-XXX-XX — APN

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GRAPHIC SCALE 1" =40'

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CONSTRUCTION IMPACT AREA (CIA) MAPS

COUNTY OF SAN BERNARDINO
DEPARTMENT OF PUBLIC WORKS

SUBMITTED BY:

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SUNBURST AVENUE BIKE LANE

TWENTYNINE PALMS HIGHWAY (SH 62)
NORTH TO CALLE LOS AMIGOS

JOSHUA TREE AREA

J.L. REF.	W.O. NO.	PLAN SCALE	SHT. NO.	TOT. SHT'S.
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- CONSTRUCTION LIMITS
- XXXX-XXX-XX — APN
- CONSTRUCTION STAGING AREA

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GRAPHIC SCALE 1" = 40'

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CONSTRUCTION IMPACT AREA (CIA) MAPS

COUNTY OF SAN BERNARDINO
DEPARTMENT OF PUBLIC WORKS

SUBMITTED BY:

TRANSPORTATION DESIGN DIVISION

SUNBURST AVENUE BIKE LANE

TWENTYNINE PALMS HIGHWAY (SH 62)
NORTH TO CALLE LOS AMIGOS

JOSHUA TREE AREA

J.L. REF.	W.O. NO.	PLAN SCALE	SHT. NO.	TOT. SHT'S.
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- EXISTING PROPERTY LINES
- CENTERLINE SURVEY
- CONSTRUCTION LIMITS
- XXXX-XXX-XX — APN

GRAPHIC SCALE 1" =40'

0 40 80 120

CONSTRUCTION IMPACT AREA (CIA) MAPS

COUNTY OF SAN BERNARDINO
DEPARTMENT OF PUBLIC WORKS

SUBMITTED BY:

TRANSPORTATION DESIGN DIVISION

SUNBURST AVENUE BIKE LANE

TWENTYNINE PALMS HIGHWAY (SH 62)
NORTH TO CALLE LOS AMIGOS

JOSHUA TREE AREA

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JL 11661 JL 11662	H14976	1" = 40'	5	10

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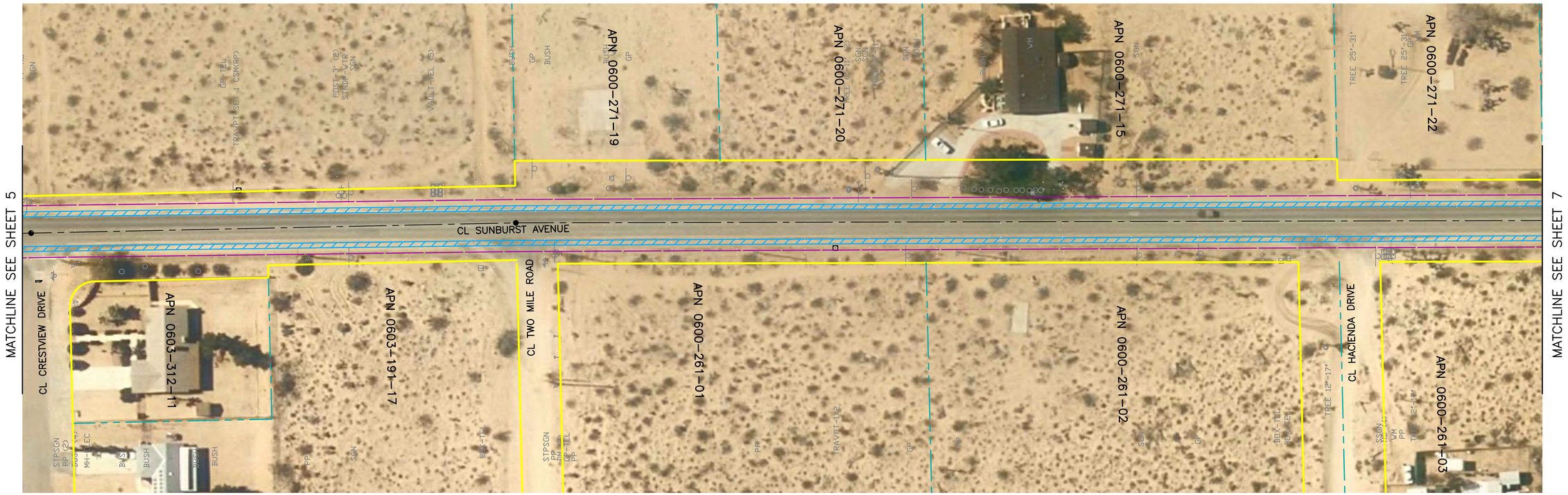

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- CENTERLINE SURVEY
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- XXXX-XXX-XX — APN

GRAPHIC SCALE 1"=40'

0 40 80 120

CONSTRUCTION IMPACT AREA (CIA) MAPS

COUNTY OF SAN BERNARDINO
DEPARTMENT OF PUBLIC WORKS

SUBMITTED BY:

TRANSPORTATION DESIGN DIVISION

SUNBURST AVENUE
BIKE LANE
TWENTYNINE PALMS HIGHWAY (SH 62)
NORTH TO CALLE LOS AMIGOS
JOSHUA TREE AREA

J.L. REF.	W.O. NO.	PLAN SCALE	SHT. NO.	TOT. SHT'S.
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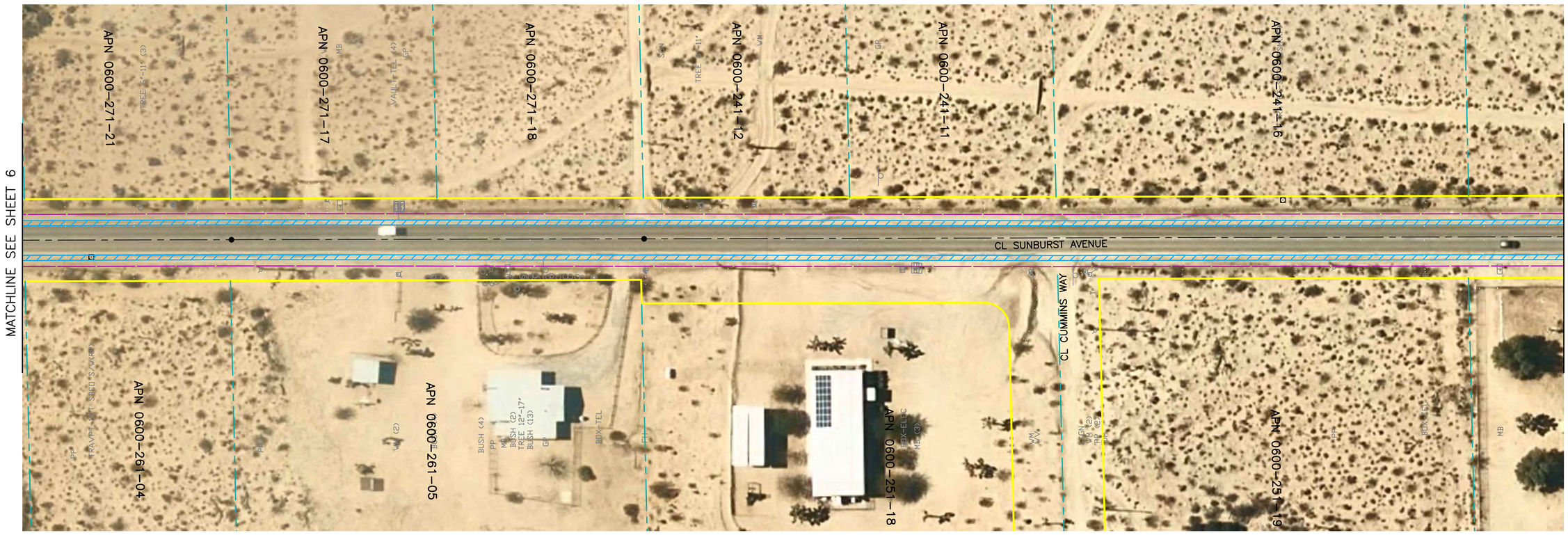

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- CENTERLINE SURVEY
- CONSTRUCTION LIMITS
- XXXX-XXX-XX — APN

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GRAPHIC SCALE 1"=40'

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CONSTRUCTION IMPACT AREA (CIA) MAPS

COUNTY OF SAN BERNARDINO
DEPARTMENT OF PUBLIC WORKS

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SUNBURST AVENUE BIKE LANE

TWENTYNINE PALMS HIGHWAY (SH 62)
NORTH TO CALLE LOS AMIGOS

JOSHUA TREE AREA

J.L. REF.	W.O. NO.	PLAN SCALE	SHT. NO.	TOT. SHT'S.
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- CONSTRUCTION LIMITS
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GRAPHIC SCALE 1"=40'

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CONSTRUCTION IMPACT AREA (CIA) MAPS

COUNTY OF SAN BERNARDINO
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TWENTYNINE PALMS HIGHWAY (SH 62)
NORTH TO CALLE LOS AMIGOS

JOSHUA TREE AREA

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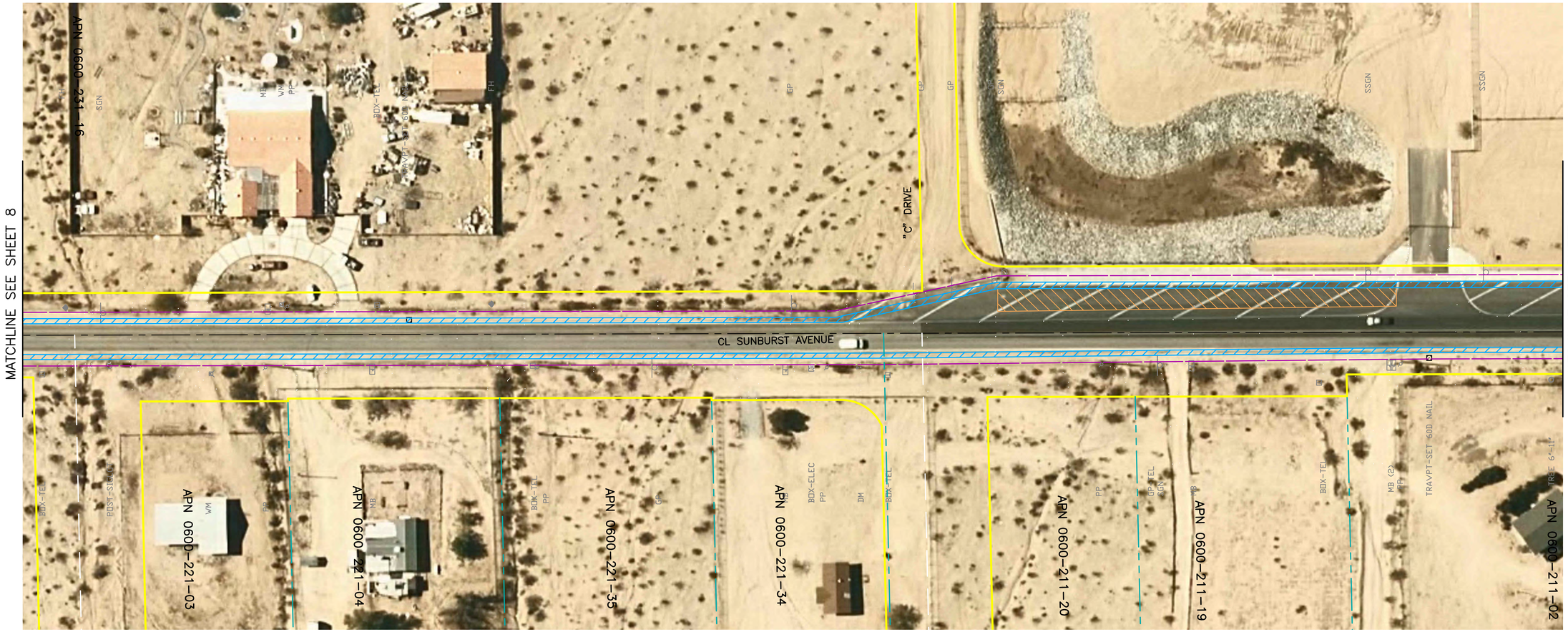

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- CONSTRUCTION STAGING AREA

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GRAPHIC SCALE 1"=40'

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CONSTRUCTION IMPACT AREA (CIA) MAPS

COUNTY OF SAN BERNARDINO
DEPARTMENT OF PUBLIC WORKS

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SUNBURST AVENUE BIKE LANE

TWENTYNINE PALMS HIGHWAY (SH 62)
NORTH TO CALLE LOS AMIGOS

JOSHUA TREE AREA

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	EXISTING PROPERTY LINES
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	CONSTRUCTION LIMITS
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GRAPHIC SCALE 1"=40'

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CONSTRUCTION IMPACT AREA (CIA) MAPS

COUNTY OF SAN BERNARDINO
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TWENTYNINE PALMS HIGHWAY (SH 62)
NORTH TO CALLE LOS AMIGOS

JOSHUA TREE AREA

J.L. REF.	W.O. NO.	PLAN SCALE	SHT. NO.	TOT. SHT'S.
JL 11661 JL 11662	H14976	1"= 40'	10	10

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MARK	REVISIONS	APPR.	DATE

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