Draft
Initial Study/Mitigated Negative Declaration for the Indian Street Sewer Crossing Project Moreno Valley, California

Prepared for
Eastern Municipal Water District
2270 Trumble Road
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February 26, 2024

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1.0 Introduction

This Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared in accordance with relevant provisions of the California Environmental Quality Act (CEQA) of 1970, as amended, and the CEQA Guidelines, as revised. This IS/MND evaluates the environmental effects of the proposed Indian Street Sewer Crossing Project (proposed project).

The IS/MND includes the following components:

- A Draft IS/MND and the formal findings made by the Eastern Municipal Water District (District or EMWD) that the proposed project would not result in any significant effects on the environment, as identified in the CEQA IS Checklist.
- A detailed project description.
- The CEQA IS Checklist, which provides standards to evaluate the potential for significant environmental impacts from the proposed project and is adapted from Appendix G of the CEQA Guidelines. The proposed project is evaluated in 21 environmental issue categories to determine whether the proposed project's environmental impacts may be significant in any category. Brief discussions are provided that further substantiate the proposed project's anticipated environmental impacts in each category.

Because the proposed project fits into the definition of a "project" under Public Resources Code Section 21065 requiring discretionary approvals by the District and because it could result in a significant effect on the environment, the proposed project is subject to CEQA review. The IS Checklist was prepared to determine the appropriate environmental document to satisfy CEQA requirements: an Environmental Impact Report (EIR), a Mitigated Negative Declaration (MND), or a Negative Declaration (ND). The analysis in this IS Checklist supports the conclusion that the proposed project may result in significant environmental impacts, but (1) revisions in the project plans or proposals made by or agreed to by the applicant before a proposed MND and IS are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and (2) there is no substantial evidence, in light of the whole record before the District, that the proposed project as revised may have a significant effect on the environment. Therefore, an MND has been prepared.

This IS/MND will be circulated for 30 days for public and agency review, during which time individuals and agencies may submit comments on the adequacy of the environmental review. Following the public review period, the District's Board will consider any comments received on the IS/MND when deciding whether to adopt the MND.

2.0 Project Description

1. Project Name:

Indian Street Sewer Crossing Project

2. Lead Agency:

Eastern Municipal Water District
2270 Trumble Road
Perris, CA 92570

3. Contact Person and Phone Number:

Joseph Broadhead
Principal Water Resource Specialist – CEQA/NEPA
Eastern Municipal Water District
2270 Trumble Road
Perris, CA 92570
(951) 928-3777
broadhej@emwd.org

4. Project Location:

The proposed project site is in the city of Moreno Valley (City), Riverside County. The site is also within Eastern Municipal Water District's service area. The proposed pipeline alignment would cross beneath State Route 60 (SR-60) from Assessor's Parcel Number (APN) 481-090-037 in the north to APN 481-101-016 in the south. The alignment would travel south through APN 481-101-016 and join an existing eight-inch sewer pipeline east of Postal Avenue. The proposed pipeline alignment would then travel southeast and then south through the parking lot of a commercial parcel (APN 481-101-041). The alignment would enter the Indian Street right-of-way (ROW) and connect with existing infrastructure in Sunnymead Boulevard (Figures 1 through 3).

5. Project Applicant/Sponsor:

Eastern Municipal Water District
2270 Trumble Road
Perris, CA 92570

6. General Plan Designation:

The project site is located within the ROWs for SR-60 , Indian Street, and Sunnymead Boulevard, which do not have General Plan designations. The project site is also located within the City's Center Mixed Use (APN 481-090-037) and Corridor Mixed Use (APN 481-101-016) General Plan land use designations.

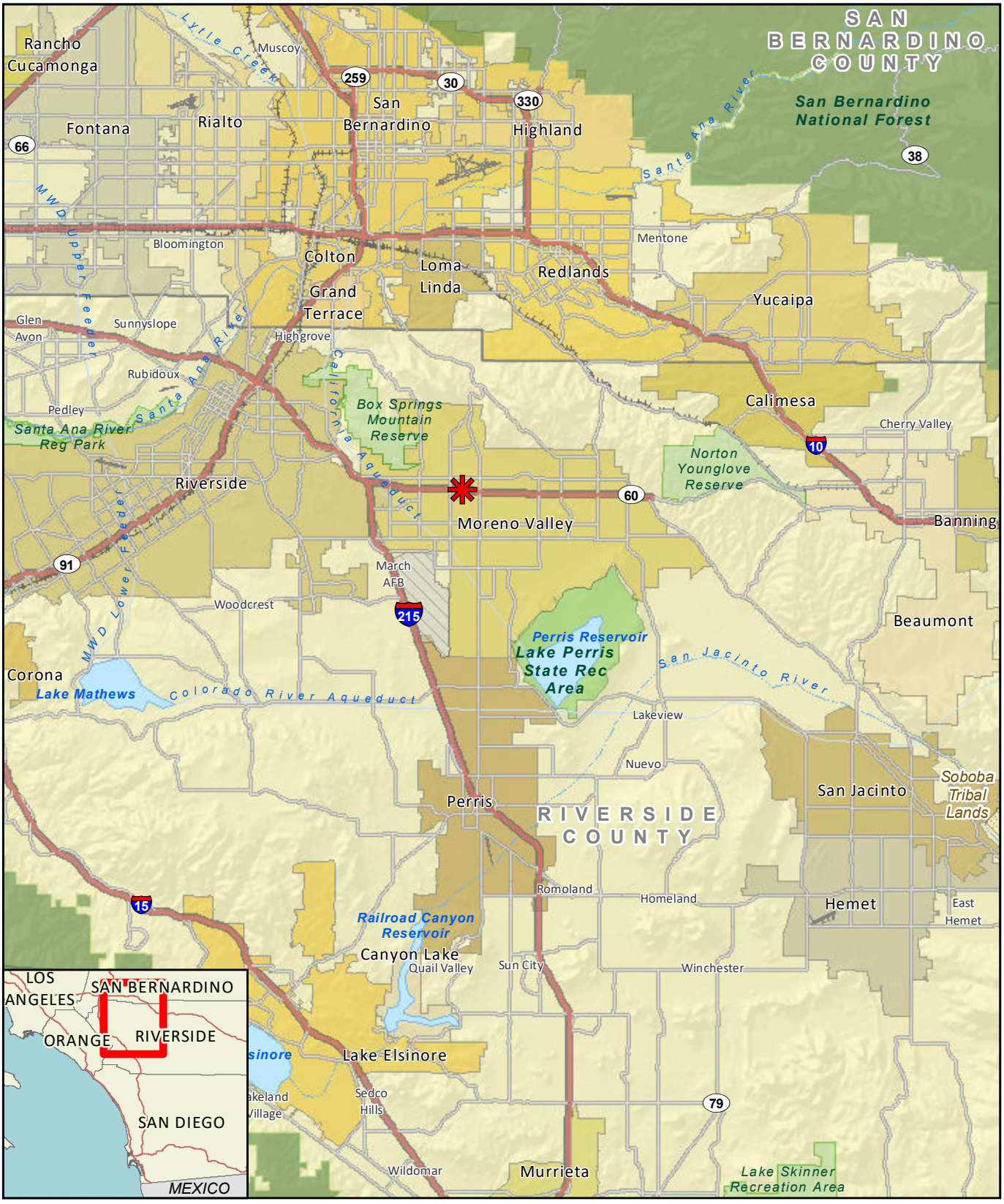

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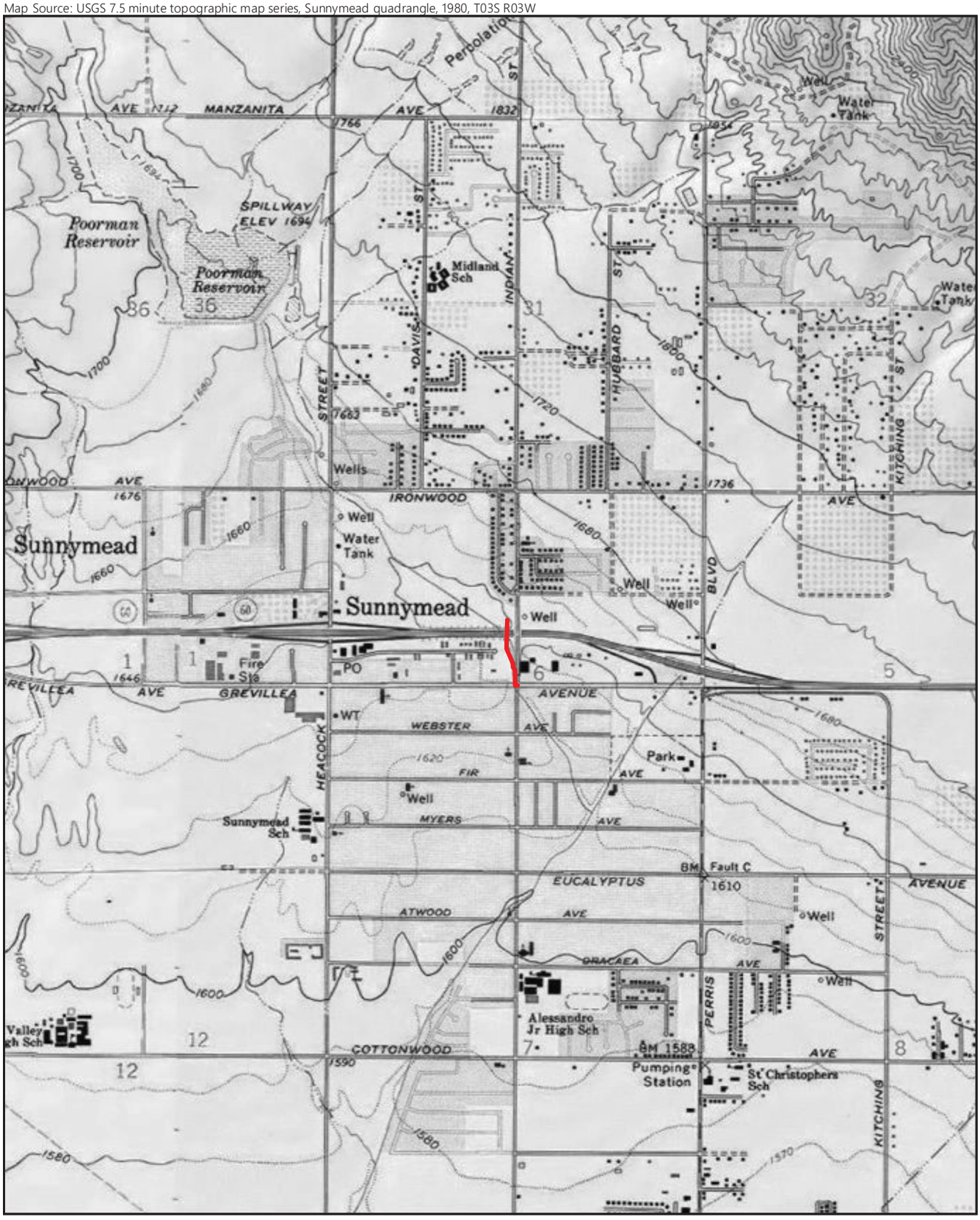
FIGURE 1
Regional Location

Map Source: USGS 7.5 minute topographic map series, Sunnymead quadrangle, 1980, T03S R03W



Project Alignment

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FIGURE 2
Project Location on USGS Map

Image Source: NearMap (flown September 2023)

FIGURE 3
Project Location on Aerial Photograph

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7. Zoning:

The roadway ROWs do not have zoning designations. Parcel 481-090-037 is designated as Retail/Mix of Uses (RMU) within Specific Plan 205 (Festival Specific Plan), while parcels 481-101-016 and 481-101-041 are designated as Village Commercial/Residential (VCR) within Specific Plan 204 (The Village Specific Plan).

8. Project Overview:

The proposed project would replace an existing sewer pipeline alignment that parallels Indian Street and crosses under State Route 60 to accommodate the Festival Specific Plan development and future developments in surrounding areas. After the new sewer pipeline is installed, the existing sewer pipeline would be abandoned in place and filled with grout.

9. Project Purpose:

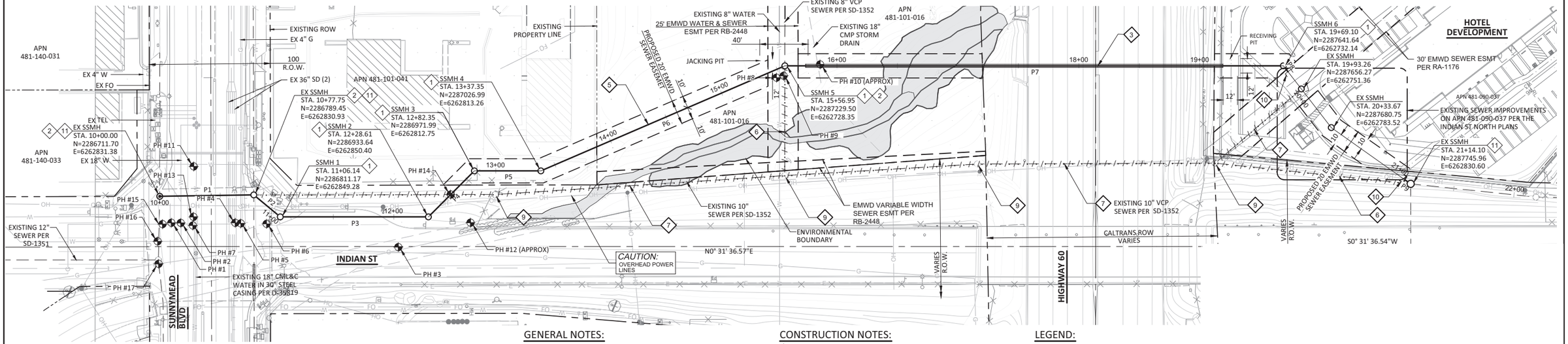
The project would upsize an existing segment of sewer pipeline to comply with current design standards and to meet existing and future demands. The existing 10-inch gravity sewer pipeline to be replaced was installed in 1966 west of Indian Street between Hemlock Avenue and Sunnymead Boulevard and has reached the end of its service life.

Growth of the area since installation of the pipe has increased wastewater flows in the 10-inch pipeline. In September 2020, the District conducted flow monitoring at multiple locations along the 10-inch pipeline. Flow monitoring results revealed that the 10-inch sewer pipeline is operating near capacity. Additionally, the nearby Festival Specific Plan has been recently approved, which includes light industrial and hotel development located on the west side of Indian Street, south of Hemlock Avenue and north of SR-60. Flows from the Festival Specific Plan development would be discharged into the 10-inch sewer pipeline at Indian Street. Therefore, existing and future projected flows necessitates upsizing the 10-inch pipeline to a 15-inch pipeline. Figure 4 shows the proposed sewer improvement plan.

10. Surrounding Land Use(s) and Project Setting:

The north portion of the project site is bounded by a site recently developed for a hotel (APN 481-090-037), Indian Street to the east, Sunnymead Boulevard in the south, and residential development to the west. The project site is located within Township 3 South, Range 3 West, of the United States Geological Survey (USGS) 7.5-minute Sunnymead quadrangle (see Figure 2; USGS 1980). The project site consists of paved and unpaved ground, either bare or with existing and disturbed vegetation, within existing easements and right-of-way of SR-60, Indian Street, and Sunnymead Boulevard. The project site is within the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) but not located within or adjacent to a designated conservation subunit, Criteria Cell, or sensitive species survey area identified by the MSHCP (Western Riverside County Regional Conservation Authority [RCA] 2003). Figure 5 identifies the locations of each photograph. Photographs 1 through 4 show the existing project site.

Map Source: Carollo



GENERAL NOTES:

1. ABANDONMENT OF SEWER MANHOLES - REMOVE AND DISPOSE OF TOP 6 FEET OF MANHOLE. INSTALL CONCRETE PLUGS ON SEWER INLETS AND OUTLET. FILL MANHOLES WITH SAND SE30 OR BETTER, OR FILL WITH GROUT PER EMWD STANDARD DETAILED PROVISION 03604 OR CELLCRETE.
2. ABANDONMENT OF SEWER PIPELINE/SEWER FORCE MAIN - INSTALL CONCRETE END PLUGS AND FILL WITH GROUT PER EMWD STANDARD DETAILED PROVISION SECTION 03604 OR CELLCRETE. REMOVE CONFLICTING PIPING AS REQUIRED.
3. REMOVE AND DISPOSE OF EXCESS MATERIALS IN ACCORDANCE TO LOCAL, STATE, AND FEDERAL REGULATIONS.

CONSTRUCTION NOTES:

1. CONSTRUCT 48" DIA MANHOLE PER EMWD STD DWG SB-53.
2. REHABILITATE EXISTING MANHOLE
3. CONSTRUCT STEEL CASING PER EMWD STD DWG SB-49.
5. CONSTRUCT 15" VCP SEWER. BEDDING AND BACKFILL PER EMWD STD DWGS SB-157, SB-158, AND SB-159.
6. ABANDON EXISTING 8" VCP SEWER. SEE GENERAL NOTES.
7. ABANDON EXISTING 10" VCP SEWER. SEE GENERAL NOTES.
9. ABANDON EXISTING CONC SEWER MANHOLE. SEE GENERAL NOTES.
10. REMOVE EXISTING CAP, TIE INTO EXISTING PIPE
11. TIE INTO EXISTING MANHOLE

LEGEND:

POTHOLE, PH#

40 0 20 40 80

(IN FEET)

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FIGURE 4
Proposed Sewer Improvement Plan

Image Source: NearMap (flown September 2023)

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FIGURE 5
Photograph Locations

PHOTOGRAPH 1
View of Project Site, Looking Northwest

PHOTOGRAPH 2
View of Project Site, Looking North

PHOTOGRAPH 3
View of Project Site, Looking Northwest

PHOTOGRAPH 4
View of Project Site, Looking North

11. Proposed Project Description:

The proposed 15-inch pipeline alignment begins north of SR-60 within a site recently developed as a hotel (APN 481-090-037). The project would install a 15-inch vitrified clay sewer pipeline throughout its proposed length connecting to the 10-inch pipeline in the south within Sunnymead Avenue in an open cut trench north to an area south of the open drainage on APN 481-101-016. At this location, trenchless technology would be used to travel beneath the drainage channel and SR-60. Figure 4 shows the locations of the jacking and receiving pits. Once on the hotel parcel north of SR-60, the pipeline would connect to an existing 12-inch pipeline.

Existing manholes within the Indian Street/Sunnymead Boulevard intersection would be reconstructed. The existing 10-inch sewer pipeline north of Sunnymead Boulevard would be abandoned in place and filled with grout. Conflicting portions of abandoned sewer pipeline would be removed as necessary and new manholes would be provided at all junction points.

Construction

Construction would occur within the public right-of-way and APNs 481-090-037, 481-101-016, and 481-101-041. Construction would be accomplished by means of a trenchless jack and bore crossing approximately 350 linear feet (LF) long underneath SR-60 and an existing drainage channel just south of SR-60 (APN 481-101-016). The pipe invert depth would be approximately 12 to 18 feet below existing ground surface (bgs). The depth of the jack and bore pit located at APN 481-101-016 would be approximately 16 feet bgs and 12 feet wide. The depth of the receiving pit located at APN 481-090-037 would be approximately 19 feet bgs and 12 feet wide. The construction sequence would begin at the Indian Street and Sunnymead Boulevard intersection and continue north to the hotel parcel (APN 481-090-037) north of SR-60. It is anticipated that soil grading quantities would be balanced on-site.

Anticipated construction equipment is shown in Table 1. Equipment staging would be located within either existing right-of-way or the District-owned parcel (APN 481-101-016). Construction would last eight months and would occur mostly during the day. Night construction would be needed at the intersection of Indian Street and Sunnymead Boulevard and would require night lighting. Construction equipment used during night construction would include bypass pumps, excavators, loaders, dump trucks, and utility trucks. Night construction would adhere to Section 9.08.100 in the Municipal Code.

As part of the encroachment permit application and prior to construction, the District would be required to obtain approval from the City for the traffic control plan (TCP). The project contractor would be required to implement traffic control measures per the approved TCPs, such as installing portable delineators, providing portable flashing beacons, providing signals at intersections, and providing illuminated directional arrows.

Table 1 Estimated Construction Equipment	
Equipment	Number Required for Pipeline
Backhoe/Loader	1
Hydraulic Excavator	1
Crane	1
Utility Truck	1
Auger Boring Machine	1
Water Truck	1
Welder	1
Compressor	1
Pump	2
Pickup Trucks	1
Dump Trucks	1
Concrete Saw	1
Pavement Breaker	1
Sweeper	1
Paver	1
Generator	1

All construction areas would be restored to pre-construction conditions following construction activities.

12. Environmental Commitments:

- Construction and operation would be required to adhere to the recommendations included in Sections 7, 8, and 9 (pages 13-25) of the project-specific geotechnical investigation (see Appendix D).
- Require open trenches to be covered with recessed trench plates.
- Construction would comply with South Coast Air Quality Management District (SCAQMD) Rules 402 (Nuisance), 403 (Fugitive Dust Control), 1108 (Cutback Asphalt), and 1113 (Architectural Coatings) requirements.
- Comply with California Air Resources Board (CARB) In-Use Off-Road Diesel-Fueled Fleets Regulation. CARB limits unnecessary idling to five minutes, requires all construction fleets to be labeled and reported to CARB, bans Tier 0 equipment and phases out Tier 1 and 2 equipment (thereby replacing fleets with cleaner equipment), and requires that fleets comply with best available control technology requirements.
- Specifications would require the contractor to prepare a Stormwater Pollution Prevention Plan (SWPPP). Construction would implement best management practices (BMPs) to control water quality of stormwater discharges offsite, according to the SWPPP, such as site management "housekeeping," erosion control, sediment control, tracking control and wind erosion control.
- A TCP will be approved for all construction work within public roadways. The TCP will be prepared in accordance with U.S. Department of Transportation Manual of Uniform Traffic Control Devices, the California Department of Transportation Manual of Uniform Traffic Control Devices, and Permit requirements by the authority having jurisdiction. Conventional traffic control measures used for a given project could include typical traffic control devices

such as traffic cones, K-rails, signs, message boards, flaggers (as needed), and related devices. When work is not being performed, trenches would be covered with an appropriate cover to restore normal traffic flow.

- Compliance with Title 22 of the California Code of Regulations and Hazardous Waste Control Law.
- Compliance with the International Fire Code (IFC) and National Fire Protection Association standards for Fire Protection in Wastewater Treatment and Collection Facilities.

13. Required Approvals:

Table 2
Required Permits and Approvals

Permit/Approval	Permitting/Approving Agency	Permit/Approval Trigger
Encroachment Permit	City of Moreno Valley	Required for any proposed sewer in the public street
Encroachment Permit	Caltrans	Required prior to construction activity
Design Plan	City of Moreno Valley	Design plan review by City of Moreno Valley
Traffic Control Permit	City of Moreno Valley	Prior to work within the public right-of-way

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

On October 13, 2023, the District sent consultation notification letters to Native American tribes on the District's Master List pursuant to the requirements of Assembly Bill 52 (AB 52) pertaining to government-to-government consultation regarding the project. Six Native American tribes were contacted and consultation was held with the Agua Caliente Band of Cahuilla Indians. The other tribes contacted either declined consultation or did not respond.

15. Summary of Environmental Factors Potentially Affected:

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

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

3.0 Draft Mitigated Negative Declaration

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

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

☒ I find that, although the proposed project might have a significant effect on the environment, there would not be a significant effect in this case because revisions in the project have been made, or agreed to, by the project proponent. A MITIGATED NEGATIVE DECLARATION shall be prepared.

☐ I find that the proposed project might have a significant effect on the environment and/or deficiencies exist relative to the City's General Plan Quality of Life Standards, and the extent of the deficiency exceeds the levels identified in the City's Environmental Quality Regulations pursuant to Zoning Code Article 47, Section 33-924 (b), and an ENVIRONMENTAL IMPACT REPORT shall be required.

☐ I find that the proposed project might have a "potentially significant impact" or "potentially significant unless mitigated impact" on the environment, but at least one effect: (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT shall be required, but it shall analyze only the effects that remain to be addressed.

☐ I find that, although the proposed project might have a significant effect on the environment, no further documentation is necessary 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.

Joe Broadhead
Signature

2/26/24
Date

Joe Broadhead
Printed Name

Principal Water Resource Specialist
Title

4.0 Initial Study Checklist

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved. A "No Impact answer should be explained where it is based on project specific factors as well as general standards.
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4. "Negative Declaration: Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level.
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or (mitigated) negative declaration. Section 15063(c)(3)(D).
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:

    a. The significance criteria or threshold, if any, used to evaluate each question; and
    b. The mitigation measure identified, if any, to reduce the impact to less than significant.

4.1 Aesthetics

Would the proposed project:

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

EXPLANATIONS:

a. Less Than Significant Impact

The Open Space and Resource Conservation Element of the City's 2040 General Plan identifies scenic resources and designated view corridors in the city. Review of Map OSRC-3 of the City's 2040 General Plan determined that the project site is located within designated view corridors (City of Moreno Valley 2021). Construction activities associated with the proposed project (e.g., presence of construction vehicles, excavated materials, laydown areas) would create short-term visual effects for the surrounding residential areas. All proposed improvements would be located underground and would not include any permanent aboveground components. Once construction is complete, the visual character of the project site would be restored to the pre-project condition. Therefore, the proposed project would not substantially alter views from any designated view corridors and would not have a substantial adverse effect on a scenic vista. Impacts would be less than significant.

b. No Impact

There are no designated state scenic highways within the city. The closest eligible state scenic highway is State Route 74, which is located approximately 14 miles south of the city. As described in Section 4.5(a) below, no historic buildings are currently located on the project site. Furthermore, there are no mature trees or rock outcroppings that would be affected by the proposed project. Therefore, the project would not substantially damage any scenic resources within a state scenic highway. No impact would occur.

c. Less Than Significant Impact

The project site is bounded by a site recently constructed with a hotel (APN 481-090-037) to the north, Indian Street to the east, Sunnymead Boulevard in the south, and residential development to the west. Construction activities associated with the proposed project (e.g., presence of construction vehicles, excavated materials, laydown areas) would create short-term visual effects for the surrounding residential areas. All proposed improvements would be located underground and would not include any permanent aboveground components. Once construction is complete, the visual character of the project site would be restored to the pre-project condition. Therefore, the project would not adversely affect the quality of public views of the project site and its surroundings, and impacts would be less than significant.

d. Less Than Significant Impact

Construction would last eight months and would occur mostly during the day. Night construction would be needed at the intersection of Indian Street and Sunnymead Boulevard and would require night lighting. Construction equipment used during night construction would include bypass pumps, excavators, loaders, dump trucks, and utility trucks. Night construction would adhere to Section 9.08.100 in the Municipal Code, encroachment permit, and TCP. In addition, the pipelines would be located underground and would not include any permanent aboveground components. Therefore, the proposed project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area, and impacts would be less than significant.

4.2 Agriculture and Forestry Resources

Would the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use, or a Williamson Act Contract?	☐	☐	☐	☒
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 1220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g])?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e. Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

EXPLANATIONS:

a. No Impact

The project site is designated as Urban and Built-up Land by the Farmland Mapping and Monitoring Program (California Department of Conservation 2022). Construction would occur within the public right-of-way and APNs 481-090-037, 481-101-016, and 481-101-041. All construction areas would be restored to pre-construction conditions following construction activities. Therefore, the proposed

project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses. No impact would occur.

b. No Impact

The City does not have any exclusive agricultural zones, and the project site and surrounding properties are not zoned for agricultural use. Review of Figure 4.2-2 of the City's 2040 General Plan Final EIR determined that the project site and surrounding properties are not subject to a Williamson Act contract (City of Moreno Valley 2021). No impact would occur.

c. No Impact

The City does not have any zoning classifications for forestland, timberland, or timberland production zones. The project site does not contain any forest or timberland as defined by Public Resources Code Section 12220[g], Public Resources Code Section 4526, or Government Code Section 51104(g). No impact would occur.

d. No Impact

The project site does not contain any forestlands or timberland as defined by Public Resources Code Section 12220[g], Public Resources Code Section 4526, or Government Code Section 51104(g). No impact would occur.

e. No Impact

There are no agricultural uses or forestlands on-site or in the vicinity of the project site. Therefore, the proposed project would not result in conversion of farmland or forestland. No impact would occur.

4.3 Air Quality

Would the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

EXPLANATIONS:

a. Less Than Significant Impact

The proposed project is located within the South Coast Air Basin (SCAB) under the jurisdiction of the SCAQMD. Air districts are tasked with regulating emissions to ensure that air quality in the SCAB does not exceed National or California Ambient Air Quality Standards (NAAQS and CAAQS). NAAQS and CAAQS represent the maximum levels of background pollution considered safe, with an adequate margin of safety, to protect the public health and welfare. NAAQS and CAAQS have been established for six common pollutants of concern known as criteria pollutants, which include ozone, carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), lead (Pb), and respirable particulate matter (PM_{10} and $PM_{2.5}$).

The SCAB is currently classified as a federal non-attainment area for ozone and $PM_{2.5}$ and a state non-attainment area for ozone, PM_{10}, and $PM_{2.5}$. The regional air quality plan, the 2016 Air Quality Management Plan (AQMP), outlines measures to reduce emissions of ozone and $PM_{2.5}$. Whereas reducing PM concentrations is achieved by reducing emissions of $PM_{2.5}$ to the atmosphere, reducing ozone concentrations is achieved by reducing the precursors of photochemical formation of ozone, volatile organic compounds (VOC) and oxides of nitrogen (NO_X).

Growth forecasting for the AQMP is based in part on the land uses established by local general plans. Thus, if a project is consistent with land use as designated in the local general plan, it can normally be considered consistent with the AQMP. Projects that propose a different land use than is identified in the local general plan may also be considered consistent with the AQMP if the proposed land use is less intensive than buildout under the current designation. For projects that propose a land use that is more intensive than the current designation, analysis that is more detailed is required to assess conformance with the AQMP.

The proposed project does not include growth-generating components, but rather would provide sewer service to accommodate the Festival Specific Plan development and future developments in surrounding areas. As such, the proposed project would be consistent with growth projections contained in the Moreno Valley General Plan and AQMP forecasts. Based on these considerations and pursuant to SCAQMD guidelines, project-related emissions are accounted for in the AQMP. Therefore, the proposed project would not conflict with or obstruct implementation of the applicable air quality plan, and impacts would be less than significant.

b. Less Than Significant Impact

Regional Significance Thresholds

NAAQS and CAAQS have been established for six criteria pollutants (ozone, CO, SO_2, NO_2, lead, and PM). As described in Section 4.3a, the SCAQMD is the air pollution control agency responsible for protecting the people and the environment of the SCAB from the effects of air pollution. Accordingly, the District evaluates project air quality emissions based on the quantitative emission thresholds originally established in the SCAQMD's CEQA Air Quality Handbook (SCAQMD 1993). SCAQMD's daily significance thresholds for impacts to regional air quality are shown in Table 3.

Table 3
SCAQMD Air Quality Significance Thresholds – Mass Daily Thresholds

Pollutant	Emissions (pounds)	
	Construction	Operational
Oxides of Nitrogen (NO_X)	100	55
Volatile Organic Compounds (VOC)	75	55
Coarse Particulate Matter (PM_{10})	150	150
Fine Particulate Matter ($PM_{2.5}$)	55	55
Oxides of Sulfur (SO_X)	150	150
Carbon Monoxide (CO)	550	550
Lead (Pb)	3	3
SOURCE: SCAQMD Air Quality Significance Thresholds (SCAQMD 2015).		

Construction of the sewer pipeline would be subject to the rules and regulations of SCAQMD. The SCAQMD rules applicable to the proposed project include the following:

- Rule 403, Fugitive Dust. This rule requires fugitive dust sources to implement best available control measures for all sources and prohibits all forms of visible particulate matter from crossing any property line. SCAQMD Rule 403 is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust.

Pipeline construction would result in short-term emissions associated with construction. Operation of the pipeline would result in emissions related to minor vehicle/equipment use associated with routine inspection and maintenance. Routine sewer video inspection would occur approximately every three years, and cleaning would occur every five to ten years. These activities would be conducted by existing District employees. Operational emissions associated with vehicle emissions from these maintenance activities would be negligible. Therefore, this analysis focuses on emissions associated with construction activities.

Construction emissions associated with pipeline construction were modeled using the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Roadway Construction Emissions Model (RCEM) Version 9.0.1 (SMAQMD 2022). The RCEM is a spreadsheet-based model that is able to use basic project information (e.g., total construction months, project type, total project area) to estimate a construction schedule and quantify exhaust emissions from heavy-duty construction equipment, haul trucks, and worker commute trips associated with linear construction projects. Version 9.0.1 of the model incorporates the most currently approved 2017 Emission Factor (EMFAC2017) model and

Off-Road emissions factors model. The 2021 Emission Factor (EMFAC2021) model was released in January 2021; however, EMFAC2021 has not yet been approved for use by the U.S. Environmental Protection Agency (U.S EPA). EMFAC2017 is the most recent version of the model approved by the U.S. EPA and was therefore used in this analysis. Use of EMFAC2021 would not result in emissions that are substantially different than those calculated in this analysis, particularly since the main source of emissions would be construction equipment, which are calculated using the Off-Road emissions factor model methodologies incorporated into RCEM. Although RCEM was developed by SMAQMD, it is appropriate for use in the SCAQMD jurisdiction because it is applicable for all statewide construction projects that involve construction equipment that is subject to CARB construction equipment emissions standards and incorporates statewide emission factor models (EMFAC2017 and Off-Road). RCEM calculates fugitive dust, exhaust, and off-gas emissions from grubbing/land clearing, grading/excavation, drainage/utilities/subgrade, and paving activities associated with construction projects that are linear in nature (e.g., road or levee construction, pipeline installation, transmission lines).

Construction is expected to begin in 2024 and last approximately eight months. The pipeline alignment would consist of a total of approximately 1,140 linear feet. The total project area is 0.8 acres. Excavated soil would be replaced in the trench once the new pipeline is replaced; therefore, there would be no soil export. Modeled construction equipment is summarized in Table 1. This equipment was modeled during each phase of construction. Two signal boards, a water truck, and employee vehicles were also included in the emission calculations. Based on RCEM default values, project construction would require up to 20 workers per day.

The maximum daily construction emissions are summarized in Table 4. Appendix A contains the RCEM calculations for the proposed project.

Table 4
Maximum Daily Construction Emissions
(pounds per day)

	Pollutant					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Grubbing/Land Clearing	3.61	30.30	42.06	0.09	6.36	2.33
Grading/Excavation	3.70	30.41	43.34	0.09	6.42	2.35
Drainage/Utilities/Subgrade	3.66	30.36	42.83	0.09	6.39	2.34
Paving	3.64	30.34	42.49	0.09	1.38	1.30
Maximum Daily Emissions	**3.70**	**30.41**	**43.34**	**0.09**	**6.42**	**2.35**
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Significant Impact?	No	No	No	No	No	No

ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_X = sulfur oxides; PM_{10} = particulate matter less than 10 microns; $PM_{2.5}$ = particulate matter less than 2.5 microns

Construction emissions were compared to the significance thresholds presented in Table 3 to assess the significance of the air quality emissions resulting from pipeline construction. These thresholds are designed to provide limits below which project emissions would not significantly change regional air quality.

As shown in Table 4, maximum daily construction emissions associated with pipeline construction are projected to be less than the applicable thresholds for all criteria pollutants, including emissions for ozone precursors (ROG and NO_X), PM_{10}, and $PM_{2.5}$. Therefore, pipeline construction would not result in a cumulatively considerable net increase in emissions of ozone, PM_{10}, or $PM_{2.5}$, and impacts would be less than significant.

Operational and maintenance activities would be conducted by existing EMWD employees. Vehicle emissions from maintenance activities would be negligible. Therefore, project operation would not result in a cumulatively considerable net increase in emissions of ozone, PM_{10}, or $PM_{2.5}$, and impacts would be less than significant.

Localized Construction Impacts

In addition to regional significance thresholds, SCAQMD utilizes Localized Significance Thresholds (LST) to evaluate localized air quality impact to sensitive receptors in the vicinity of the proposed project (SCAQMD 2008). LSTs represent maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. Localized air quality impacts would occur if pollutant concentrations at sensitive receptors exceeded applicable NAAQS or CAAQS.

The project site is located within Source Receptor Area 24. LSTs apply to on-site air emissions of CO, NO_2, PM_{10}, and $PM_{2.5}$. The LST methodology states that only on-site emissions should be compared to LSTs. Therefore, off-site emissions associated with worker travel, materials deliveries, and other mobiles sources are not evaluated against LSTs. The nearest sensitive receptor, a residence, is located approximately 130 feet from the pipeline alignment. The LSTs for a two-acre site with receptors at 80 feet were used. Appendix A contains and Table 5 provides the results of the LST analysis.

Table 5
Localized Construction Emissions

	Pollutant			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emission	30.41	43.34	6.42	2.35
LST Threshold	*170*	*883*	*7*	*4*
Threshold Exceeded?	No	No	No	No

As shown in Table 5, maximum localized pipeline construction emissions would not exceed any of the SCAQMD recommended localized screening thresholds. Therefore, pipeline construction would not exceed the LST thresholds for CO, NO_X, PM_{10}, or $PM_{2.5}$, and impacts would be less than significant.

Localized Operational Impacts

After installation of the underground pipeline, there would be occasional inspection and maintenance trips. Routine sewer video inspection would occur approximately every three years, and cleaning would occur every five to ten years. These activities would be conducted by existing EMWD employees. Operational emissions associated with vehicle emissions from these maintenance activities would be negligible. Therefore, project operation would not exceed the LST thresholds for CO, NO_X, PM_{10}, or $PM_{2.5}$, and impacts would be less than significant.

c. Less Than Significant Impact

A sensitive receptor is a person in the population who is more susceptible to health effects due to exposure to an air contaminant than is the population at large. Examples of sensitive receptor locations in the community include residences, schools, playgrounds, childcare centers, churches, athletic facilities, retirement homes, and long-term health care facilities. Sensitive receptors near the project site include residential uses to west, south, north, and northwest. The nearest sensitive receptor, a residence, is located approximately 130 feet west of the proposed alignment. Pollutants that have the potential to affect sensitive receptors include criteria pollutants, diesel particulate matter (DPM), and CO hotspots. Ozone is formed through the combination of ROG and NO_X, with help from sunlight and heat. Exposure to either can impact respiratory health, causing respiratory inflammation and asthma exacerbations. Health effects of DPM are wide ranging, with strong links to all-cause mortality, cardiovascular mortality and hospitalizations, and respiratory and asthma hospitalizations. Adverse health effects associated with CO include chest pain in heart patients, headaches, and reduced mental alertness. Impacts to sensitive receptors from criteria pollutants are discussed above in Section 4.3b, Localized Construction Impacts. DPM and CO hotspots are discussed below.

Diesel Particulate Matter

Construction of the pipeline would result in short-term diesel exhaust emissions from on-site heavy-duty equipment. Construction of the pipeline would result in the generation of diesel exhaust DPM emissions from the use of off-road diesel equipment required for construction activities and on-road diesel equipment used to bring materials to and from the project site.

Generation of DPM from construction projects typically occurs in a single area for a short period. Construction is anticipated to last for approximately eight months. The dose to which the receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the Maximally Exposed Individual. The risks estimated for a Maximally 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 toxic emissions, should be based on a 30-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the proposed project (OEHHA 2015). Although the alignment is located adjacent to residential uses, construction equipment would only be located adjacent to a particular sensitive receptor for a matter of days or weeks since work would move along the alignment. Thus, because the duration of proposed construction activities near any specific sensitive receptor would be minimal and would be significantly less than the 30-year exposure period used in health risk assessments, the impacts would be less than significant.

Additionally, with ongoing implementation of U.S. EPA and CARB requirements for cleaner fuels; off-road diesel engine retrofits; and new, low-emission diesel engine types, the DPM emissions of individual equipment would be reduced over time. As discussed previously, all construction equipment is subject to the CARB In-Use Off-Road Diesel-Fueled Fleets Regulation, which limits unnecessary idling to five minutes, requires all construction fleets to be labeled and reported to CARB, bans Tier 0 equipment and phases out Tier 1 and 2 equipment (thereby replacing fleets with

cleaner equipment), and requires that fleets comply with best available control technology requirements. Therefore, due to the limited duration of construction activities, the limited amount of time equipment would be located adjacent to any specific sensitive receptor, and implementation of the In-Use Off-Road Diesel-Fueled Fleets Regulation, DPM generated by project construction is not expected to create conditions where the probability is greater than 10 in 1 million of contracting cancer for the Maximally Exposed Individual or to generate ground-level concentrations of non-carcinogenic toxic air contaminants that exceed a Hazard Index greater than 1 for the Maximally Exposed Individual. Therefore, pipeline construction would not expose sensitive receptors to substantial pollutant concentration, and impacts would be less than significant.

Carbon Monoxide Hot Spots

A CO hot spot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near intersections. CO hot spots have the potential to violate state and federal CO standards at intersections, even if the broader basin is in attainment for federal and state levels. CO hot spots occur nearly exclusively at signalized intersections operating at level of service (LOS) E or F. Due to increased requirements for cleaner vehicles, equipment, and fuels, CO levels in the state have dropped substantially. All air basins are attainment or maintenance areas for CO. Therefore, more recent screening procedures based on more current methodologies have been developed. The SMAQMD developed a screening threshold in 2011 which states that any project involving an intersection experiencing 31,600 vehicles per hour or more will require detailed analysis. In addition, the Bay Area Air Quality Management District developed a screening threshold in 2010 which states that any project involving an intersection experiencing 44,000 vehicles per hour would require detailed analysis.

Pipeline construction would generate vehicle trips in the form of construction trucks and worker commute vehicles. Based on the RCEM emission calculations prepared for project construction, up to 20 daily worker trips would occur during peak construction activities. Signalized intersections affected by the proposed project include the intersections of Indian Street and Sunnymead Boulevard. Based on the traffic volumes modeled as part of the Moreno Valley General Plan Update, the existing daily traffic volume on Indian Street and Sunnymead Boulevard are approximately 3,500 and 2,500, respectively. Peak hour traffic volumes are typically 10 percent of the average daily traffic. Based on this, the peak hour turning volumes are projected to be well less than 31,600 vehicles. The addition of construction traffic to area roadways would not cause any intersections to operate at LOS E or F and would not significantly increase peak hourly volumes. Construction vehicle generation would also be temporary. Therefore, pipeline construction would not generate CO hot spots, and impacts would be less than significant.

d. Less Than Significant Impact

The potential for an odor impact is dependent on a number of variables, including the nature of the odor source, distance between the receptor and odor source, and local meteorological conditions. During construction, diesel equipment may generate some nuisance odors from equipment exhaust. Additionally, paving activities have the potential to generate odors while laying asphalt. Sensitive receptors near the project site/pipeline alignment include residential uses. However, exposure to odors associated with project construction would be short-term and temporary in nature. In addition, construction activities within the project site would be required to comply with SCAQMD Rule 402, which prohibits the discharge of odorous emissions that would create a public nuisance. Further, per

CARB's Airborne Toxic Control Measures 13 (California Code of Regulations Chapter 10 Section 2485), the applicant shall not allow idling time to exceed five minutes unless more time is required per engine manufacturers' specifications or for safety reasons. Compliance with this regulation would reduce odors from equipment exhaust. Given the short-term nature of construction, compliance with SCAQMD Rule 402, and the distance to the nearest sensitive receptors, project construction would not generate odors that would affect a substantial number of people, and impacts would be less than significant.

The following list provides some common types of facilities that are known producers of objectionable odors (Bay Area Air Quality Management District 2017). This list of facilities is not meant to be all-inclusive.

- Wastewater Treatment Plant
- Wastewater Pumping Facilities
- Sanitary Landfill
- Transfer Station
- Composting Facility
- Petroleum Refinery
- Asphalt Batch Plant
- Chemical Manufacturing
- Fiberglass Manufacturing
- Painting/Coating Operations
- Rendering Plant
- Coffee Roaster
- Food Processing Facility
- Confined Animal Facility/Feed Lot/Dairy
- Green Waste and Recycling Operations
- Metal Smelting Plants

The proposed project does not include any of these uses that are typically associated with odor complaints. There would be no operational source of odors associated with the proposed project, as the sewer pipeline would be completely enclosed and underground. Therefore, project operation would not generate substantial amounts of odors adversely affecting a substantial number of people. No impact would occur.

4.4 Biological Resources

Would the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have substantial adverse effects, 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 (CDFW) or U.S. Fish and Wildlife Service (USFWS)?	☐	☒	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS?	☐	☐	☒	☐
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance?	☐	☐	☒	☐

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

EXPLANATIONS:

The following section is based on the Biological Resources Survey prepared by RECON Environmental, Inc. (RECON) dated November 17, 2023 (Appendix B).

a. Potentially Significant Unless Mitigation Incorporated

The survey area included the 1.6-acre project site and a 100-foot buffer, totaling 11.87 acres. Biological resources and potential impacts to biological resources are identified in Figure 6.

Vegetation Communities/Land Cover Types

The survey area surrounding the project site supports five vegetation communities/land cover types: mule fat scrub, non-native riparian, non-vegetated channel, disturbed habitat, and urban/developed. The acreage of these vegetation communities/land cover types is presented in Table 6 and descriptions are provided below.

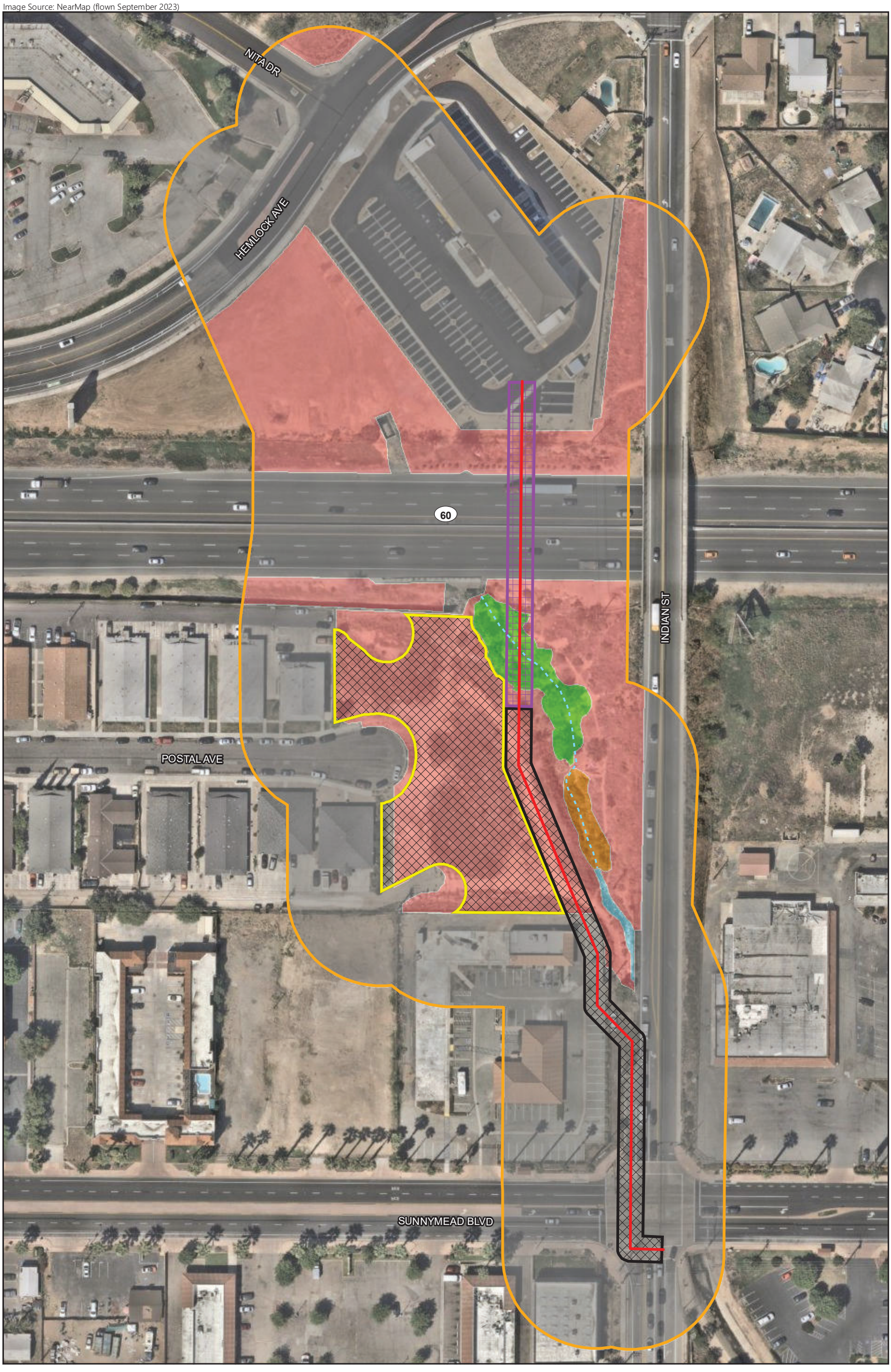
Table 6
Vegetation Communities and Land Cover Types within Survey Area (acres)

Land Cover and Vegetation Communities	Project Site	Survey Area (Project Site Plus 100-foot Buffer)
Mule Fat Scrub	–	0.07
Non-native Riparian	–	0.19
Non-vegetated Channel	–	0.02
Disturbed Habitat	1.17	3.57
Urban/Developed	0.43	8.02
TOTAL	**1.60**	**11.87**

Mule Fat Scrub

Mule fat scrub occurs as a small patch along the banks of the drainage channel (see Figure 6). This vegetation community is dominated by mule fat (*Baccharis salicifolia*) and non-native brome grasses (*Bromus* spp.) with a small patch of Goodding's black willow (*Salix gooddingii*).

Image Source: NearMap (flown September 2023)



Project Alignment
Jack and Bore Area
Impact Area
Staging Area
Survey Area

Vegetation Community
Mule Fat Scrub
Non-native Riparian
Non-vegetated Channel
Disturbed Habitat
Urban/Developed

0 Feet 100

RECON

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FIGURE 6
Project Impacts

Non-native Riparian

Non-native riparian occurs throughout the northern portion of the drainage channel (see Figure 6). This portion of the drainage contains Mexican fan palm (*Washingtonia robusta*), Siberian elm (*Ulmus pumila*), shamel ash (*Fraxinus uhdei*), and Mexican palo verde (*Parkinsonia aculeata*). This area also contains alternating vegetation density consisting of grasses (*Bromus* spp. and *Avena* sp.), short-pod mustard (*Hirschfeldia incana*), radish (*Raphanus sativus*), and western ragweed (*Ambrosia psilostachya*).

Non-vegetated Channel

A non-vegetated channel is present within the active floodplain of the drainage channel (see Figure 6). Sparse vegetation and a non-native riparian canopy occur throughout this land cover type. Exposed rock and sediment are present within the drainage channel. No water was flowing at the time of the survey and the channel appears to support either an ephemeral or an intermittent flow regime.

Disturbed Habitat

Disturbed habitat consists of undeveloped land within vacant lots and contains low-growing and herbaceous vegetation (see Figure 6). Non-native plant species dominate this land cover type including non-native grasses, red-stem filaree (*Erodium cicutarium*), and cheeseweed (*Malva parviflora*). Tire tracks were observed resulting in compacted and disturbed ground cover.

Urban/Developed

Urban/developed land accounts for the majority of the project site and surrounding area (see Figure 6). This land cover type occurs as various roadways, parking lots, and residential and commercial development. Vegetation within urban/developed land consists of ornamental landscaping and a variety of non-native species (see Figure 6).

Wildlife Species

No sensitive wildlife were detected within or adjacent to the project site during the biological survey. The mule fat scrub and non-native riparian vegetation communities are limited in extent and completely surrounded by dense urban development. They do not contain suitable habitat structures to support sensitive riparian bird species, such as least Bell's vireo (*Vireo bellii pusillus*).

Plant Species

No sensitive plants were observed within or adjacent to the project site during the biological survey, and no sensitive plant species are anticipated to occur due to the highly disturbed and developed nature of the project site. Furthermore, no sensitive plant species are known to occur within a three-mile radius of the project site based on a database review (CDFW 2023).

Migratory and Nesting Birds

Direct impacts to migratory and nesting birds may result from the removal of vegetation should construction occur during the general avian breeding season (February 1 to September 15). These

species are protected by the Migratory Bird Treaty Act and California Fish and Game Code Section 3503.5 and 3503.5. Therefore, impacts to nesting individuals would be considered significant. Implementation of mitigation measure BIO-1 would reduce potential impacts to migratory and nesting birds to a level less than significant.

b. Less Than Significant Impact

Direct impacts associated with the proposed project would be limited to disturbed land and urban/developed land, which are not considered sensitive riparian habitat. Therefore, the proposed project would not have a substantial direct adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS, and impacts would be less than significant.

c. Potentially Significant Unless Mitigation Incorporated

As discussed in the biological resources survey (see Appendix B), a drainage channel is located on the District-owned parcel (APN 481-101-016) south of the freeway. Although no formal wetland delineation was prepared, the biological resources survey notes that vegetated portions of the drainage channel could meet the hydrophytic vegetation, hydric soils, and wetland hydrology parameters to be considered wetland waters of the U.S. under the jurisdiction of the U.S. Army Corps of Engineers (USACE) and the Regional Water Quality Control Board (RWQCB). Similarly, these areas could be considered riparian under the jurisdiction of CDFW, along with areas of non-native riparian and mule fat scrub that may not meet the three USACE wetland parameters. The non-vegetated portions of the drainage channel could be considered non-wetland waters of the U.S. under the jurisdiction of the USACE and RWQCB, delineated at the lateral extent of the Ordinary High Water Mark. The non-vegetated channel could also be considered streambed under the jurisdiction of the CDFW. Moreover, the drainage channel may qualify for the MSHCP definition of a riparian/riverine resource because of its ability to carry freshwater flows drained from the surrounding urban areas at least a portion of the year.

The proposed project would avoid direct impacts to potentially jurisdictional wetland and non-wetland waters by utilizing trenchless construction methods to avoid the riparian area. However, the project has potential to result in indirect impacts to potential jurisdictional resources occurring adjacent to the project site, which would be a significant impact. Implementation of mitigation measure BIO-2 would reduce potential impacts to jurisdictional features to a level less than significant.

d. Less Than Significant Impact

As discussed in the Biological Resources Survey (see Appendix B), the project site consists of a developed roadway and a vacant infill lot surrounded by dense commercial and residential development. Though the vacant lot contains disturbed land with a small riparian area that likely provides habitat for urban-adapted species and local wildlife movement, these habitats are completely surrounded by dense urban development and lack of connectivity to off-site riparian corridors or other areas of open space. Thus, it is not anticipated that the habitats within the vacant lot would provide habitat for regionally significant wildlife movements. Additionally, the project site is unlikely to support wildlife nursery sites or large roosting or breeding colonies due to the disturbed and developed nature of the project site. Therefore, the proposed project would not 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, and impacts would be less than significant.

e. Less Than Significant Impact

The area of potential effect (APE), defined as the area that will be directly impacted by project construction activities, does not possess any trees. The adjacent areas that include trees would be protected during project construction through avoidance. All other potential impacts to biological resources have been addressed in Section 4.4(a) through 4.4(d) above. Therefore, the project would not conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance, and impacts would be less than significant.

f. Less Than Significant Impact

The project site is located within the boundaries of the Western Riverside County MSHCP plan area. The MSHCP allocates responsibility for assembly and management of its Conservation Areas to local, state, and federal governments, as well as private and public entities engaged in construction that may impact MSHCP covered species. The project site is not located inside or adjacent to any Criteria Area, Criteria Cell, or Conservation Area identified for conservation potential by the Western Riverside MSHCP. In addition, the project has been designed to avoid potential riparian or riverine areas and incorporates best management practices as outlined in Section 4.10 to ensure that construction-related runoff and pollutants do not enter adjacent riparian or riverine areas. Therefore, the proposed project is consistent with the requirements contained in the MSHCP and would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan, and impacts would be less than significant.

MITIGATION MEASURES

BIO-1: Migratory and Nesting Birds

Construction should be conducted outside of the breeding season (January 15 to August 31). If construction must take place during the nesting season, a qualified biologist shall perform a preconstruction survey for nesting birds within the project site, including a 500-foot buffer. The nesting bird survey shall occur no more than seven days prior to the start of construction. If active bird nests are confirmed to be present during the preconstruction survey, a buffer zone will be established by a qualified biologist until a qualified biologist has verified that the young have fledged or the nest has otherwise become inactive.

BIO-2: Aquatic Resources

To avoid indirect impacts to potentially jurisdictional aquatic features, best management practices (BMPs), such as the use of signage and or flagging identifying Environmentally Sensitive Areas (ESAs), construction fencing, silt fences, fiber rolls, and/or gravel bags, shall be implemented. No equipment maintenance or fueling shall be performed within 100 feet the non-vegetated channel where petroleum products or other pollutants from the equipment may enter this area.

4.5 Cultural Resources

Would the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of an historical resource pursuant to §15064.5?	☐	☐	☒	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☒	☐
c. Disturb human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

EXPLANATIONS:

The following section is based on the Archaeological Survey Report prepared by RECON dated October 27, 2023 (Appendix C), which conducted background research, review of topographic maps and historic aerial photographs, and an on-foot survey.

a. Less Than Significant Impact

Prior to the survey, a records search was requested from the Eastern Information Center (EIC). The results indicated that 16 archaeological investigations have been completed within the one-mile buffer, one of which includes the project APE. The records search results also indicated that two cultural resources have been recorded within one mile of the project APE. The two previously recorded cultural resources are historic-era resources comprising a concrete foundation along with a utility pole and a fragment of glass and a trash dump. No previously recorded cultural resources are located within the project APE.

A review of historic topographic maps and aerial photographs indicate the entire project APE has been subject to surface disturbance back at least to early 1959—the first available aerial photograph for the site. The 1959 photograph shows the current alignment of Sunnymead Boulevard and an elevated and graded pad adjacent to the north of Sunnymead Boulevard in the area of the current parking area and building located at the northwest corner of Sunnymead Boulevard and Indian Street. The 1959 photograph also exhibits the channelized drainage within the alignment area of the current Indian Street, continuing upslope and to the north to the area of the current alignment of SR-60 where the drainage originates from the northeast, as well as the graded lot at the northern end of the project APE, north of the current SR-60. The earliest available topographic map from 1954 represents the current alignments of Sunnymead Boulevard and Indian Street and a southeast-trending water course crossing the project APE just north of the intersection of the current

alignments of Sunnymead Boulevard and Indian Street. The 1966 photograph exhibits the construction of SR-60 and the current alignment of Postal Avenue. Grading for the construction of the current residential development along Postal Avenue, including the APE portion within the current vacant lots located at the eastern end of the cul-de-sac, also happened by 1966. Between 1978 and 1984 the current commercial property located on the northwest corner of the Sunnymead Boulevard and Indian Street intersection was developed. No other major changes are noted in subsequent available aerial photographs.

The onsite pedestrian survey of the project APE did not identify any cultural resources. The southern portion of the APE is the fully developed intersection of Sunnymead Boulevard and Indian Street. Moving north, the alignment hugs the western side and right-hand turn lane of Indian Street, then turns northwest, crossing a vacant and disturbed portion of the Indian Street right-of-way, and enters a developed commercial lot. Continuing northwest, the alignment crosses a series of disturbed vacant lots on the west side of a disturbed and channelized drainage. The alignment turns north and crosses a portion of the disturbed and channelized drainage which exhibits dense non-native vegetation until intersecting with the southern manufactured support slope of SR-60. This disturbed area exhibits modern poured concrete features and placed rip rap. The alignment continues north and incorporates a portion of the current SR-60. The portion of the APE north of SR-60 exhibits a manufactured east-west drainage with irrigation and ornamental vegetation, a chain-link fence, and the newly developed parking area of a hotel The central portion of the APE situated between the southern side of SR-60 and the north side of a current commercial property exhibited a fair amount of modern refuse and surface debris owed to a small number of transients who occupy the drainage. Therefore, the proposed project would not cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5, and impacts would be less than significant.

b. Less Than Significant Impact

As described in Section 4.5a, no archaeological resources have been previously recorded within or immediately adjacent to the project site. In addition, a letter was sent on August 10, 2023, to the Native American Heritage Commission (NAHC) requesting a search of their Sacred Lands File to identify spiritually significant and/or sacred sites or traditional use areas in the project vicinity. A response was received from the NAHC on September 7, 2023, indicating that the Sacred Lands File search results were negative (see Attachment 1 of Appendix C). No previously recorded significant or potentially significant prehistoric or historic cultural resources were observed during the survey of the APE. Given past disturbances, the possibility of buried significant cultural resources being present within the project site is considered low. Therefore, the proposed project would not cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5, and impacts would be less than significant.

c. Potentially Significant Unless Mitigation Incorporated

There are no formal cemeteries or recorded burials in the vicinity of the project site. While no human remains are anticipated to be discovered during project construction, in the unexpected event that human remains are encountered during construction, mitigation measure CUL-1 would require the project to follow Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5. Implementation of mitigation measure CUL-1 would reduce potential impacts to a level less than significant.

MITIGATION MEASURE

CUL-1: Human Remains

If Native American human remains are encountered, Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5 will be followed. If human remains are encountered, no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the coroner shall contact the NAHC within 24 hours. Subsequently, the NAHC shall identify the person or persons it believes to be the "most likely descendant." The most likely descendant shall then make recommendations and engage in consultations concerning the treatment of the remains as provided in Public Resources Code Section 5097.98.

4.6 Energy

Would the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

EXPLANATIONS:

a. Less Than Significant Impact

Construction of the proposed project would consume energy during both construction and operation. Energy use during construction would occur within two general categories: vehicle fuel used by workers commuting to and from the construction site, and fuel use by vehicles and other equipment to haul materials and conduct construction activities. While construction activities would consume fuels, project-related consumption of such resources would be temporary and would cease upon the completion of construction. In addition, mobile equipment energy usage during construction would be minimized as the proposed project would comply with CARB's idling regulations, which restrict idling diesel vehicles and equipment to five minutes. Additionally, consistent with state requirements, all construction equipment would meet CARB Tier 3 In-Use Off-

Road Diesel Engine Standards. Engines are required to meet certain emission standards, and groups of standards are referred to as Tiers. A Tier 0 engine is unregulated with no emission controls, and each progression of standard level (i.e., Tier 1, Tier 2, Tier 3, etc.) generates lower emissions, uses less energy, and is more advanced technologically than the previous tier. CARB's Tier 3 In-Use Off-Road Diesel Engine Standards requires that construction equipment fleets become cleaner and use less energy over time. The fuel consumed during construction would also be typical of similar construction projects and would not require the use of new energy resources beyond what are typically consumed in California. Therefore, construction of the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources, and impacts would be less than significant.

Operational energy usage would be minimal and would consist of occasional maintenance worker vehicle trips. Therefore, operation of the proposed project would not result in a wasteful, inefficient, or unnecessary consumption of energy resources, and impacts would be less than significant.

b. Less Than Significant Impact

Equipment required for pipeline construction would be subject to CARB's idling regulations and Tier 3 In-Use Off-Road Diesel Engine Standards. Operation of the proposed project would not require ongoing or regular use of a substantial amount of energy. Therefore, the proposed project would not conflict with any state or local plans for renewable energy or energy efficiency, and impacts would be less than significant.

4.7 Geology and Soils

Would the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
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?	☐	☐	☒	☐
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
iv. Landslides?	☐	☐	☒	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

EXPLANATIONS:

The following section is based on the Geotechnical Investigation Report prepared by Converse Consultants on September 14, 2022 (Appendix D).

a.i. Less Than Significant Impact

The proposed project would not be associated with significant levels of risk of loss, injury, or death from rupture of a known earthquake fault. The Geotechnical Investigation Report determined that the project site is not located within a currently designated State of California or Riverside County Earthquake Fault Zone and is not underlain by any active faults. The nearest active fault zones are a Riverside County Fault Zone located 2.83 miles northeast of the project site and the San Jacinto Fault Zone located 4 miles northeast of the project site. Therefore, the risk of earthquake ground rupture is low, and impacts related to the exposure of people or structures to rupture of a known earthquake fault would be less than significant.

a.ii. Less Than Significant Impact

The project site is in a seismically active southern California region. However, the proposed project is limited to construction of sewer pipelines and would not introduce any residential, commercial, or other uses that could expose people to strong ground shaking. Therefore, impacts related to strong seismic shaking would be less than significant.

a.iii. Less Than Significant Impact

Liquefaction is the process by which clay-free soil, such as sands and silts, temporarily lose cohesion and strength and turn into a fluid state during a severe ground-shaking event. This primarily occurs in areas saturated with high groundwater levels and recent deposits of sands and silts. The Geotechnical Investigation Report completed for the project determined that the potential for liquefaction at the project site is low. Additionally, project construction would adhere to the recommendations in the Geotechnical Investigation Report. Therefore, impacts related to liquefaction would be less than significant.

a.iv. Less Than Significant Impact

Seismically induced landslides and other slope failures are common occurrences during or after earthquakes in areas of significant relief. As previously stated, the project site is not within a fault zone. The project site and surrounding area are relatively flat, and project construction would adhere to the recommendations in the Geotechnical Investigation Report. Therefore, the proposed project would not cause or increase the potential for landslides, and impacts would be less than significant.

b. Less Than Significant Impact

As outlined in Section 4.10, the proposed project would implement best management practices during construction consistent with the requirements of the NPDES Construction General Permit and the City standards that are designed to minimize erosion potential by controlling stormwater flows and minimizing topsoil loss. Therefore, compliance with the requirements of the NPDES Construction General Permit would prevent substantial soil erosion or the loss of topsoil, and impacts would be less than significant.

c. Less Than Significant Impact

As described in Section 4.7a.iii., the Geotechnical Investigation Report completed for the project determined that the potential for liquefaction at the project site is low. Additionally, project construction would adhere to the recommendations in the Geotechnical Investigation Report. Therefore, impacts associated with unstable soils would be less than significant.

d. Less Than Significant Impact

The proposed project is limited to construction of sewer pipelines and would not introduce any residential, commercial, or other uses that could expose people to risks associated with expansive soil. Additionally, project construction would adhere to the recommendations in the Geotechnical Investigation Report. Therefore, impacts associated with expansive soils would be less than significant.

e. No Impact

The proposed project does not propose the use of septic tanks or alternative wastewater disposal systems. No impact would occur.

f. Potentially Significant Unless Mitigation Incorporated

Review of Figure 4.7-4 Paleontological Sensitivity in the City's 2040 General Plan Update Final EIR determined that the project site is located in a high paleontological sensitivity area. The project site includes paved roads and land that has been previously disturbed. Therefore, the project would have the potential to impact paleontological resources, which would be considered significant. Implementation of mitigation measure PAL-1 would reduce impacts to a level less than significant.

MITIGATION MEASURES

PAL-1: Paleontological Monitor

Excavation shall be monitored by a qualified paleontologist. If paleontological resources are encountered, the paleontological monitor shall have the authority to temporarily halt or redirect work while the paleontological resources are documented and assessed. If significant deposits are found, additional data recovery shall be conducted, as necessary, in order to adequately mitigate project impacts. The fossil collection and all associated documentation shall be legally transferred to a qualified repository within Riverside County. Full-time paleontological monitoring can be reduced to part-time inspections or ceased entirely if determined adequate by the qualified paleontologist.

4.8 Greenhouse Gas Emissions

Would the proposed project:

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

a. Less Than Significant Impact

The District has not adopted its own greenhouse gas (GHG) thresholds of significance for CEQA. The SCAQMD published its Interim CEQA GHG Significance Thresholds for Stationary Sources, Rules, and

Plans in 2008 (SCAQMD 2008). The interim thresholds are a tiered approach; projects may be determined to be less than significant under each tier or require further analysis under subsequent tiers. For the proposed project, the most appropriate screening threshold for determining GHG emissions is the SCAQMD proposed Tier 3 screening threshold (SCAQMD 2010); therefore, a significant impact would occur if the proposed project would exceed the SCAQMD proposed Tier 3 screening threshold of 3,000 metric tons carbon dioxide equivalent (MT CO_2E) per year. Based on guidance from the SCAQMD, total construction GHG emissions resulting from a project should be amortized over the lifetime of a project, which is defined as 30 years (SCAQMD 2009).

Pipeline construction would result in short-term emissions from construction activities. Construction emissions were calculated using RCEM and the parameters discussed in detail in Section 4.3b above. Total construction GHG emissions are summarized in Table 7.

Table 7
Summary of Total Construction GHG Emissions

Phase/Year	GHG Emissions (MT CO_2E)
Grubbing/Land Clearing	65
Grading/Excavation	308
Drainage/Utilities/Subgrade	202
Paving	99
Total Construction Emissions	**675**
Amortized Construction Emissions	*22*

SOURCE: Appendix A
NOTE: Totals may vary due to rounding

As shown in Table 7, the proposed project would result in a total of 675 MT CO_2E over the entire construction period, which would be 22 MT CO_2E per year when amortized over the lifetime of the proposed project. After installation of the underground pipeline, there would be occasional inspection and maintenance trips. Routine sewer video inspection would occur approximately every three years, and cleaning would occur every five to ten years. These activities would be conducted by existing District employees. Operational emissions associated with vehicle emissions from these maintenance activities would be negligible and there would be no other source of operational emissions. Overall, GHG emissions generated during construction and operation would be less than the 3,000 MT CO_2E annual screening threshold. Therefore, based on the screening threshold the proposed project's GHG emissions would not generate a level of GHG emissions, either directly or indirectly, that would have a significant impact on the environment, and impacts would be less than significant.

b. Less Than Significant Impact

Executive Order (EO) S-3-05 and EO B-30-15 established GHG emission reduction targets for the state, and Assembly Bill 32 (AB 32) launched the CARB Climate Change Scoping Plan that outlined the reduction measures needed to reach the 2020 target, which the state has achieved. As required by Senate Bill 32, CARB's 2017 Scoping Plan outlines reduction measures needed to achieve the interim 2030 target, and the 2022 Scoping Plan outlines the path towards carbon neutrality by 2045. As detailed in the response under Section 4.8a above, the proposed project would result in

construction GHG emissions below the SCAQMD proposed Tier 3 screening threshold of 3,000 MT CO_2E per year. Pipeline construction within the project site would not result in emissions that would adversely affect statewide attainment of GHG emission reduction goals as described in AB 32, EOs S-3-05 and B-30-15, and Senate Bill 32. Therefore, construction emissions would have a less than cumulatively considerable contribution to global climate change.

The proposed project would not result in a significant increase in regional vehicle miles traveled since vehicle trips would be limited to occasional maintenance trips that would be performed by existing District employees. The proposed project would be consistent with land use designations and growth projections, as it would provide improved sewer connections to existing and future planned development. Because project trips would be limited to occasional maintenance activities, it would not conflict with the transportation-related GHG reduction goals outlined in the Regional Transportation Plan. Further, the proposed project would not conflict with energy efficiency standards or conflict with Southern California Edison's Renewables Portfolio Standard renewable energy goals, as these are not applicable to project construction and operation. Therefore, the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions, and impacts would be less than significant.

4.9 Hazards and Hazardous Materials

Would the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

EXPLANATIONS:

a. Less Than Significant Impact

The proposed project is limited to construction of a sewer pipeline and would not involve the routine transport, use, or disposal of significant hazardous materials. Project construction may involve the use of small amounts of solvents, cleaners, paint, oils, and fuel for equipment. However, these materials are not acutely hazardous, and use of these common hazardous materials in small quantities would not represent a significant hazard to the public or environment. Additionally, project construction would be required to be undertaken in compliance with applicable federal, state, and local regulations pertaining to the proper use of these common hazardous materials. Compliance with these regulations is mandatory per standard permitting conditions.

At the state level, Title 22 of the California Code of Regulations and Hazardous Waste Control Law, Chapter 6.5 establishes the Department of Toxic Substance Control (DTSC). DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under the Resource Recovery and Conservation Act and the California Hazardous Waste Control Law. Both laws impose "cradle to grave" regulatory systems for handling hazardous waste in a manner that protects human

health and the environment. The California Environmental Protection Agency has delegated some of its authority under the Hazardous Waste Control Law to county health departments and other Certified Unified Program Agencies, including the Riverside County Department of Environmental Health.

At the federal level, the IFC, created by the International Code Council, is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The IFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The IFC and the International Building Code (IBC) use a hazard classification system to determine what protective measures are required to protect fire and life safety. These measures may include construction standards, separations from property lines, and specialized equipment. To ensure that these safety measures are met, the IFC employs a permit system based on hazard classification.

Therefore, the proposed project would not create a significant hazard to the public or the environment through routine transport, use, or disposal of hazardous materials, and impacts would be less than significant.

b. Less Than Significant Impact

As described in Section 4.9a, operation of the proposed pipelines would not involve the routine transport, use, or disposal of significant hazardous materials. Furthermore, project construction would be required to implement the Division of Occupational Safety and Health of California Construction Safety Plan/Hazard Communication Program; in case of accidental release, the proposed project would be required to comply with the Code of Federal Regulations Section 1910.120. Roadways would be restored to preexisting conditions once construction is completed. Therefore, the proposed project would not create upset and accident conditions that could result in the release of hazardous materials, and impacts would be less than significant.

c. Less Than Significant Impact

Seventh Day Adventist School is located approximately 0.2 mile south of the project site and Bear Valley Elementary School is located approximately 1.8 miles southeast of the project site. Construction of the proposed project would not require the use of acutely hazardous materials and would be limited to the use of small amounts of lubricants, cleaners, paint, oils, adhesives, solvents, asphalt, and fuel for equipment. Use of these common hazardous materials in small quantities would not represent a significant hazard to the public or environment, and the use and handling of hazardous materials during construction would be conducted consistent with all applicable regulations (see Section 4.9a). Therefore, the proposed project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and impacts would be less than significant.

d. Less Than Significant Impact

The GeoTracker database identified the following properties within one mile of the project site, none of which are active or located on the project site:

1. Valley Party Rentals located approximately 319 feet to the west of the project site. The site received a "Completed – Case Closed" determination as of February 1, 1990.

2. Mickey's Car Wash located approximately 0.43 mile southwest of the project site. The site received a "Completed – Case Closed" determination as of May 28, 1998.
3. FASTRIP #13 located approximately 0.5 mile southwest of the project site. The site received a "Completed – Case Closed" determination as of November 13, 2006.
4. ARCO #1807 located approximately 0.5 mile west of the project site. The site received a "Completed – Case Closed" determination as of April 29, 2005.
5. CHEVRON #9-7568 located approximately 0.5 mile west of the project site. The site received a "Completed – Case Closed" determination as of June 3, 1997.
6. CHEVRON #9-7568 located approximately 0.5 mile west of the project site. The site received a "Completed – Case Closed" determination as of November 30, 2009.
7. Shell Heacock located approximately 0.5 mile northwest of the project site. The site received a "Completed – Case Closed" determination as of March 17, 2017.
8. Circle K #312 located approximately 0.5 mile northwest of the project site. The site received a "Completed – Case Closed" determination as of April 30, 1996.
9. Moreno Valley Cleaners located approximately 0.8 mile west of the project site. The site received a "Completed – Case Closed" determination as of August 20, 1997.
10. EZ Serve #784 located approximately 0.5 mile east of the project site. The site received a "Completed – Case Closed" determination as of December 9, 1997.
11. Gas 4 Less located approximately 0.5 mile east of the project site. The site received a "Completed – Case Closed" determination as of November 24, 1999.
12. Thrifty #353 located approximately 0.5 mile southeast of the project site. The site received a "Completed – Case Closed" determination as of November 26, 2013.
13. Southland Corp 7 Eleven Store #17964 located approximately 0.5 mile southeast of the project site. The site received a "Completed – Case Closed" determination as of May 16, 1996.

The EnviroStor database identified the following properties within one mile of the project site, none of which are active or located on the project site:

1. The Festival in Moreno Valley located approximately 0.3 mile northwest of the project site. The site received a "Inactive – Action Required" determination as of April 18, 2019.
2. Sunnymead Middle School Expansion located approximately 0.6 mile southwest of the project site. The site received a "No Further Action" determination as of June 16, 2008.
3. Elementary School No. 26 located approximately 0.8 mile southwest of the project site. The site received a "No Action Required" determination as of October 8, 2004.

As described above, the project site is not located on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (Department of Toxic Substances Control 2023 and State Water Resources Control Board 2023). Therefore, the proposed project is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and impacts would be less than significant.

e. No Impact

The nearest airport is the March Air Reserve Base (MARB), which is located approximately 3.1 miles southwest of the project site. Review of Map S-7 of the Safety Element of the City's 2040 General Plan determined that the project site is outside the Airport Influence Area Boundary for MARB (City

of Moreno Valley 2021). Therefore, the project would not result in a safety hazard or excessive noise for people residing or working in the project area. No impact would occur.

f. Less Than Significant Impact

Review of Exhibit S-6, Emergency Evacuation Risk Assessment, in the City's 2040 General Plan identifies SR-60, Indian Street, and Sunnymead Avenue as evacuation routes. Construction of the proposed project would be temporary, and a TCP would be required to ensure that traffic conditions are maintained. Roadways would be restored to preexisting conditions once construction is completed. Therefore, the proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, and impacts would be less than significant.

g. Less Than Significant Impact

Review of Map S-5 of the Safety Element of the 2040 General Plan determined that the project site and surrounding area is not located in a High Fire Hazard Severity Zone (City of Moreno Valley 2021). Furthermore, the project site is in an urban area consisting primarily of developed land. Therefore, the project would not expose people or structures, either directly or indirectly, to significant risk of loss, injury, or death involving wildland fires, and impacts would be less than significant.

4.10 Hydrology and Water Quality

Would the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces in a manner, which would:				

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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 existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv. impede or redirect flood flows?	☐	☐	☒	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

EXPLANATIONS:

a. Less Than Significant Impact

Construction of the proposed pipelines would have the potential to generate erosion/sedimentation and pollutants that could impact water quality. However, the proposed project would be subject to the NPDES permit requirements overseen by the District, including preparation and implementation of a SWPPP for the prevention of polluted runoff during construction. The proposed project would be required to prepare and implement a SWPPP identifying feasible BMPs prior to the commencement of construction activities, and to incorporate water quality design features to address potential erosion and siltation impacts. Upon completion of construction activities, the project site would be restored to preexisting conditions. Therefore, the proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality, and impacts would be less than significant.

b. Less Than Significant Impact

Project construction would not increase the amount of impervious surface area and, therefore, would not interfere with groundwater recharge. The proposed project would not introduce any residential,

commercial, or other uses that would use groundwater. Therefore, the proposed project would not significantly decrease groundwater supplies or interfere with groundwater recharge or obstruct sustainable groundwater management, and impacts would be less than significant.

c.i. Less Than Significant Impact

As described in Section 4.10a, the proposed project would implement construction BMPs, identified in the proposed project SWPPP, consistent with the NPDES Construction General Permit that would prevent erosion and stormwater runoff during construction. Roadways would be restored to preexisting conditions once construction is complete. Therefore, the proposed project would not substantially alter the drainage pattern of the site or the surrounding area in a manner that would result in substantial erosion or siltation on- or off-site, and impacts would be less than significant.

c.ii. Less Than Significant Impact

As described in Section 4.10a, the proposed project would implement construction BMPs, identified in the proposed project SWPPP, consistent with the NPDES Construction General Permit that would control the rate or amount of surface runoff. Roadways would be restored to preexisting conditions once construction is complete, and the proposed project would not result in an increase in the amount of impervious surface in the post-project condition. Therefore, the proposed project would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site, and impacts would be less than significant.

c.iii. Less Than Significant Impact

As described in Section 4.10a, the proposed project would implement construction BMPs, identified in the proposed project SWPPP, consistent with the NPDES Construction General Permit that would minimize erosion and prevent pollution from affecting water quality and control the rate or amount of surface runoff. Roadways would be restored to preexisting conditions once construction is complete, and the proposed project would not result in an increase in the amount of impervious surface in the post-project condition. Therefore, the proposed project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff, and impacts would be less than significant.

c.iv. Less Than Significant Impact

The project site is not located within a Federal Emergency Management Agency floodplain or floodway as identified in Exhibit S-4, Flood Hazard Areas, in the City's 2040 General Plan. The proposed project would be limited to construction of pipelines that would be located underground and would not impede or redirect flood flows. Roadways would be restored to preexisting conditions once construction is complete and vacant land would be restored to allow maintenance access. Additionally, the proposed project would not result in an increase in the amount of impervious surface impervious surface in the post-project condition. Therefore, the proposed project would not impede or redirect flood flows, and impacts would be less than significant.

d. No Impact

The project site is not located within a dam inundation zone. The project site is located approximately 42 miles inland from the Pacific Ocean and, therefore, is not subject to risk associated with tsunami. The nearest body of water is Lake Perris (Perris Reservoir), located approximately six miles southeast of the project site. Given this distance of six miles, the project would not be affected by a seiche. Therefore, the project would not result in impacts associated with flood hazard, tsunami, or seiche zones. No impact would occur.

e. Less Than Significant Impact

As described in Section 4.10a, project construction would implement construction BMPs, identified in the proposed project SWPPP, consistent with the NPDES Construction General Permit that would prevent erosion and pollution from affecting water quality. As described in Section 4.10b, the proposed project would not decrease groundwater supplies or interfere with groundwater recharge. Therefore, the proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, and impacts would be less than significant.

4.11 Land Use and Planning

Would the proposed project:

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

EXPLANATIONS:

a. Less Than Significant Impact

The proposed project is limited to a sewer pipeline extension and would not result in any permanent changes to the existing communities, including land use plans, zoning, or circulation networks. The proposed project would replace an existing sewer pipeline alignment that parallels Indian Street and crosses under SR-60 to accommodate the Festival Specific Plan development and future developments in surrounding areas. Portions of the roadways would be closed during construction, and equipment staging would be located within either existing right-of-way or the District-owned

parcel (APN 481-101-016). Traffic control measures could create a temporary nuisance to residents in the area; however, construction activities would be temporary. Access along Indian Street, Sunnymead Boulevard, and SR-60 would be maintained during construction. Operation of the proposed project would not result in any access restrictions since the pipelines are located underground. Ongoing maintenance would also not result in a disruption to the surrounding properties. Therefore, the proposed project would not physically divide an established community and impacts would be less than significant.

b. Less Than Significant Impact

The proposed project would be located within the right-of-way of SR-60, Indian Street, and Sunnymead Boulevard, which do not have General Plan or zoning designations. The proposed project would also be within APN 481-090-037, is designated in the City's General Plan as Center Mixed Use and has a zoning designation of Retail/Mix of Uses within Specific Plan 205 (Festival Specific Plan), and APNs 481-101-016, and 481-101-041, which are designated in the City's General Plan as Corridor Mixed Use and have a zoning designation of Village Commercial/Residential within Specific Plan 204 (The Village Specific Plan). The proposed project is limited to construction of a sewer pipeline and would not physically impact any surrounding land uses. The pipelines would be located below ground and would not result in any permanent changes aboveground. As described in Section 4.4f, the proposed project would be consistent with the Western Riverside MSHCP and would mitigate all potential impacts related to biological resources to a level less than significant. As described throughout this Draft IS/MND, all other impacts not requiring mitigation would be less than significant or would have no impact. Therefore, the proposed project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect, and no impact would occur.

4.12 Mineral Resources

Would the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

EXPLANATIONS:

a. No Impact

Review of Figure 4.12-1 of the City 2040 General Plan Update Final EIR determined that the project site is classified as Mineral Resource Zone 3, land for which the significance of mineral resources cannot be determined (City of Moreno Valley 2021). Land classified as Mineral Resource Zone 3 is not considered a significant mineral resource. Therefore, the proposed project would not result in the loss of availability of known mineral resources that would be of value to the region and the residents of the state or of a locally important mineral resource recovery site. No impact would occur.

b. No Impact

There are no active mineral resource extraction facilities within the City, and the City's 2040 General Plan Update Final EIR does not identify the project site as an existing mineral resource recovery site (City of Moreno Valley 2021). No impact would occur.

4.13 Noise

Would the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b. Generation of excessive ground borne vibration or ground borne 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 area to excessive noise levels?	☐	☐	☐	☒

EXPLANATIONS:

a. Potentially Significant Unless Mitigation Incorporated

Noise Fundamentals

Noise is defined as sound that is loud, unpleasant, unexpected, or undesired, and therefore, may cause general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment. Decibels (dB) are the standard unit of measurement of the sound pressure generated by noise sources and are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale for earthquake magnitudes. A doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the noise energy would result in a 3 dB decrease.

The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-weighted scale, which approximates the frequency response of the average young ear when listening to most ordinary everyday sounds, was devised. Noise levels using A-weighted measurements are written as dB(A). It is widely accepted that the average healthy ear can barely perceive changes of 3 dB(A) (increase or decrease) and that a change of 5 dB(A) is readily perceptible. An increase of 10 dB(A) is perceived as twice as loud, and a decrease of 10 dB(A) is perceived as half as loud (Caltrans 2013).

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important. In addition, most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. The noise descriptors used for this study are the equivalent noise level (L_{eq}), the maximum noise level, and the community noise equivalent level (CNEL).

The L_{eq} is the equivalent steady-state noise level in a stated period of time that is calculated by averaging the acoustic energy over a time period; when no period is specified, a one-hour period is assumed. The maximum noise level is the highest sound level occurring during a specific period.

The CNEL is a 24-hour equivalent sound level. The CNEL calculation applies an additional 5 dB(A) penalty to noise occurring during evening hours, between 7:00 p.m. and 10:00 p.m., and a 10 dB(A) penalty is added to noise occurring during the night, between 10:00 p.m. and 7:00 a.m. These increases for certain times are intended to account for the added sensitivity of humans to noise during the evening and night.

Regulatory Framework

The District, as a public agency, is not subject to other jurisdictional agencies' established noise standards. Likewise, as a public agency, the District is not subject to the City or County ordinances and would not be required to obtain variances. The District has not established an applicable noise standard of its own for permanent or temporary ambient noise levels. However, the District follows a "good neighbor" approach to adhering to local noise standards. The noise standards of the City are used for the purposes of evaluating the significance of the proposed project's noise levels for the purposes of this analysis under CEQA.

The City regulates noise through the Municipal Code under Title 11 Peace, Morals and Safety, Chapter 11.80, Noise Regulation. Tables 8 and 9 summarize the maximum continuous and maximum impulsive noise level limits specified in Section 11.80.030(B)(1) of the Municipal Code. As shown, for sound that lasts eight hours per day, that limit is 90 dB(A) L_{eq}.

Table 8
Maximum Continuous Sound Levels

Duration per Day Continuous Hours	Sound Level Limit [dB(A) L_{eq}]
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25	115
dB(A) = A-weighted decibels; L_{eq} = one-hour equivalent noise level	

Table 9
Maximum Impulsive Sound Levels

Number of Repetitions per 24-Hour Period	Sound Level Limit [dB(A) L_{eq}]
1	145
10	135
100	125
dB(A) = A-weighted decibels; L_{eq} = one-hour equivalent noise level	

For long-term operational noise, Section 11.80.030(C) of the Municipal Code provides noise level limits for non-impulsive noise. The section states,

> No person shall maintain, create, operate or cause to be operated on private property any source of sound in such a manner as to create any non-impulsive sound which exceeds the limits set forth for the source land use category in Table 11.80.030-2 when measured at a distance of two hundred (200) feet or more from the real property line of the source of the sound, if the sound occurs on privately owned property, or from the source of the sound, if the sound occurs on public right-of-way, public space or other publicly owned property.

The operational sound level limits provided in Table 11.80.030-2 of the Municipal Code are summarized in Table 10. These guidelines apply to permanent noise sources and would not be applicable to temporary construction noise.

Table 10 Maximum Sound Levels for Source Land Uses [dB(A) L_{eq}]			
Residential		Commercial	
Daytime	Nighttime	Daytime	Nighttime
60	55	65	60
dB(A) = A-weighted decibels; L_{eq} = one-hour equivalent noise level			

The Municipal Code limits construction activities in two parts of the code: Sections 8.14.040(E) and 11.80.030(D)(7). Section 8.14.040(E) states that construction within the city shall only occur from 7:00 a.m. to 7:00 p.m. from Monday through Friday excluding holidays and from 8:00 a.m. to 4:00 p.m. on Saturdays. Section 11.80.030(D)(7) states that no person shall operate or cause the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between the hours of 8:00 p.m. and 7:00 a.m. such that the sound creates a noise disturbance. For power tools, specifically, 11.80.030(D)(9) states that no person shall operate or permit the operation of any mechanically, electrically, or gasoline motor-driven tool during nighttime hours that causes a noise disturbance across a residential property line. A noise disturbance is defined as any sound that disturbs a reasonable person of normal sensitivities, exceeds the sound level limits set forth in the Noise Ordinance, or is plainly audible (as measured at a distance of 200 feet from the property line of the source of the sound if the sound occurs on privately owned property or public right-of-way, public space, or other publicly owned property).

The Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual also provides guidance for regulating construction noise. According to the FTA, project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. The FTA considers a daytime exterior construction noise level of 80 dB(A) L_{eq} as a reasonable threshold for noise-sensitive residential land use. As this is more restrictive than the 90 dB(A) L_{eq} limit for eight hours of continuous noise, it is conservatively used to determine the significance of daytime construction noise. Nighttime construction noise impacts were evaluated using the criteria provided in Section 11.80.030(D) of the Municipal Code.

Construction Noise

Noise impacts from construction are a function of the noise generated by equipment, the location and sensitivity of nearby land uses, and the timing and duration of the noise generating activities. Table 11 presents a list of noise generation levels for various types of equipment anticipated to be used for construction of the pipeline. The duty cycle is the amount of time that equipment generates the reported noise level during typical, standard equipment operation. The noise levels and duty cycles summarized in Table 11 are based on measurements and studies conducted by Federal Highway Administration (FHWA) and the FTA.

Table 11 Typical Construction Equipment Noise Levels			
Equipment	Maximum Noise Level at 50 Feet [dB(A) L_{max}]	Typical Duty Cycle	Maximum Average Hourly Noise Level [dB(A) L_{eq}]
Backhoe/Loader	80	40%	76
Compressor	80	40%	76
Concrete Saw	90	20%	83
Generator	82	50%	79
Hydraulic Excavator	85	40%	81
Paver	85	50%	82
Pavement Breaker	85	20%	78
Sweeper[1]	84	40%	80
Water Truck[1]	84	40%	80
Utility Truck[2,3]	78	5%	65
Dump Trucks[3]	84	5%	71
SOURCE: FHWA 2006, FTA 2006. [1]Sweeper and water truck noise assumed to be comparable to tractor noise. [2]Utility truck noise assumed to be comparable to flat-bed truck noise. [3]The dump truck and utility truck duty cycle was adjusted to 5 percent to represent the time this equipment is arriving at and departing from the site. Engines would be idle all other times.			

Due to the complex nature of construction sites, construction noise from a linear project, such as a pipeline project, is assessed from the centerline of the alignment and work area. Maximum noise levels would occur when the construction equipment is nearest to a noise-sensitive receiver. Although construction equipment may temporarily be located at the point on the alignment nearest to a receiver, throughout the day equipment would move along the alignment. Therefore, the distance from a receiver to the centerline of the alignment is not the same as the average distance during a given day from the receiver to construction equipment. Thus, average noise levels correlate to the area of active construction.

Residential receivers are located as close as 130 feet from the pipeline alignment. Noise calculations for the proposed project were prepared by RECON (Appendix E). Construction noise levels were assessed at a distance of 130 feet. This is conservative since construction equipment would move further away from a particular receiver as activities move along the pipeline, resulting in a decrease in average noise levels.

Construction noise levels were calculated assuming the simultaneous use of two pieces of construction equipment during each phase. Although more construction equipment would be present on-site, not all would be used at the same time. Noise levels from construction activities are typically considered point sources and would drop off at a rate of -6 dB(A) per doubling of distance over hard site surfaces, such as streets and parking lots. Construction noise attenuation is calculated using the following formula:

$N_R = N_C + 20 \times \text{Log}(D_C/D_R)$

where

N_R = Noise level at receiver

N_C = Construction equipment reference noise level

D_C = Construction equipment reference noise level distance (i.e., 50 feet)

D_R = Distance to receiver (i.e., 130 feet)

The average noise level at the residential receivers for daytime construction activities were then calculated for each phase. The results are summarized in Table 12. Noise calculations are provided in Appendix E.

Table 12
Daytime Construction Equipment Noise Levels

Phase	Equipment	Maximum Average Hourly Noise Level at 50 Feet [dB(A) L_{eq}]	Phase Duration (months)	Average Distance to Receiver (feet)	Average Noise Level at Receiver [dB(A) L_{eq}]
Grubbing/ Land Clearing	Concrete Saw	83	0.8	130	75
	Dump Truck	71			
	Total	**83**			
Grading/ Excavation	Excavator	81	3.6	130	74
	Front End Loader	76			
	Total	**82**			
Drainage/ Utilities/ Subgrade	Excavator	81	2.4	130	74
	Utility Truck	74			
	Total	**82**			
Paving	Paver	82	1.2	130	74
	Utility Truck	65			
	Total	**82**			

As shown in Table 12, daytime construction noise levels are not anticipated to exceed 80 dB(A) L_{eq} at the nearest residential uses. As these activities would occur during the daytime hours as specified in Section 8.14.040(E) of the Municipal Code and the project would implement the best management practices outlined in mitigation measure NOI-1, which would further reduce noise generated by daytime construction activities to a level less than significant.

As discussed in Section 2.0, nighttime construction would be needed at the intersection of Indian Street and Sunnymead Boulevard. Construction equipment used during night construction would include bypass pumps, excavators, loaders, dump trucks, and utility trucks. Nighttime construction noise levels were calculated assuming the simultaneous use of the two loudest pieces of required equipment: an excavator and loader. Together, this equipment would generate a noise level of 83 dB(A) L_{eq} at 50 feet. The sensitive receptor closest to the nighttime construction area are the residential uses located approximately 190 feet southeast of the pipeline alignment. Noise levels at this receptor due to nighttime construction activities were calculated and are summarized in Table 13.

Table 13 Nighttime Construction Equipment Noise Levels					
Phase	Equipment	Maximum Average Hourly Noise Level at 50 Feet [dB(A) L_{eq}]	Average Distance to Receiver (feet)	Average Noise Level at Receiver without Barrier [dB(A) L_{eq}]	Average Noise Level at Receiver with Barrier [dB(A) L_{eq}]
Nighttime Construction	Excavator	81	190	71	54
	Front End Loader	76			
	Total	**83**			

As shown in Table 13, nighttime construction noise levels would be as high as 71 dB(A) L_{eq} at the nearest residential use. Section 11.80.030(D)(7) states that no person shall operate or cause the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between the hours of 8:00 p.m. and 7:00 a.m. such that the sound creates a noise disturbance. A noise disturbance is defined as any sound that disturbs a reasonable person of normal sensitivities, exceeds the sound level limits set forth in the Noise Ordinance, or is plainly audible (as measured at a distance of 200 feet from public right-of-way). Since these activities would occur during the nighttime hours and would potentially create a noise disturbance, impacts associated with nighttime construction noise would be considered significant.

To reduce noise levels during nighttime construction activities, the District would implement noise reduction measures specified in Mitigation Measures NOI-1, which include the use of sound blankets, noise walls, etc., to attenuate sound as much as possible to minimize neighborhood disturbance. Implementation of mitigation measure NOI-1 would reduce impacts to a level less than significant.

Operational Noise

The belowground pipeline would not generate noise during operation. Noise may be associated with occasional vehicle maintenance trips, but these trips would be negligible. Therefore, operation of the proposed project would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project, and impacts would be less than significant.

b. Less Than Significant Impact

Human reaction to vibration is dependent on the environment the receiver is in, as well as individual sensitivity. For example, outdoor vibration is rarely noticeable and generally not considered annoying. Typically, humans must be inside a structure for vibrations to become noticeable and/or annoying (FTA 2006). Based on several federal studies, the threshold of perception is 0.035 inch per second (in/sec) peak particle velocity (PPV), with 0.24 in/sec PPV being distinctly perceptible (Caltrans 2013). Based on best available data, impacts for hydraulic breakers, or hammers, and other non-transient sources such as those associated with project construction shall be considered significant if the PPV exceeds 0.2 in/sec. Vibration perception would occur at structures, as people do not perceive vibrations without vibrating structures.

Construction activities produce varying degrees of ground vibration depending on the equipment and methods employed. While ground vibrations from typical construction activities rarely reach levels high enough to cause damage to structures, special consideration must be made when

sensitive or historic land uses are near the construction site. The construction activities that typically generate the highest levels of vibration are blasting and impact pile driving. The proposed project would not require pile driving or blasting. The equipment with the greatest potential to generate vibration would be a jackhammer. According to the FTA, jackhammers generate vibration levels of 0.035 in/sec PPV at 25 feet. The nearest residential structure is located 130 feet from the pipeline alignment, and the nearest non-residential structure is located as close as 15 feet from the alignment. This vibration level would be 0.061 in/sec PPV at 15 feet and 0.006 in/sec PPV at 130 feet. Vibration levels at the nearest residential use would not be perceptible. Although vibration levels may be barely perceptible at the nearest non-residential structure, they would not be considered distinctly perceptible and would not cause structural damage. Therefore, project construction would not generate excessive groundborne vibration or groundborne noise levels, and impacts would be less than significant.

Operation of the proposed project would not generate groundborne noise or vibration. No impact would occur.

c. No Impact

The project site is not located within the vicinity of a private airstrip. The nearest airport is the March Air Reserve Base, located approximately 3.1 miles southwest of the project site. As shown in Map N-2 of the City's 2040 General Plan, the project site is located well outside the 60 CNEL for the MARB (City of Moreno Valley 2021). In addition, the project would not involve noise-sensitive receptors. Therefore, the project would not result in excessive noise due to an airport. No impact would occur.

MITIGATION MEASURES

For construction activities that are proposed to occur outside the allowable hours specified in Municipal Code Sections 8.14.040 and 11.80.030 (7:00 a.m. and 7:00 p.m. on weekdays and 8:00 a.m. to 4:00 p.m. on Saturdays), the District shall submit a TCP and application for an Encroachment Permit. Ultimately, City conditions on the TCP and Encroachment Permit would supersede some or all of the listed noise mitigation. The final noise mitigation, whether those listed herein or a combination of measures, will ensure a less than significant impact.

NOI-1: Noise Best Management Practices

- The District shall conduct noise testing at the nearest sensitive receptor to determine the nighttime ambient noise level. If construction noise levels are found to exceed specified allowances for noise-sensitive receptors, the District shall require the construction contractor to provide temporary fences and noise barriers to block the line of sight between the construction equipment and the noise-sensitive receptor when the use of heavy equipment is prevalent for construction occurring in the outside hours specified in the City of Moreno Valley Municipal Code, Sections 8.14.040 and 11.80.030 (7:00 a.m. and 7:00 p.m. on weekdays and 8:00 a.m. to 4:00 p.m. on Saturdays). The District shall provide a 15-foot-tall construction fence equipped with noise reduction materials such as noise blankets rated to achieve nighttime noise performance levels of 55 dB(A) L_{eq}, or current conditions if greater than 55 dB(A) L_{eq}, at noise-sensitive receptors with a line of sight to the construction site at the intersection of Indian Street and Sunnymead Boulevard.

- Construction activities shall occur between 7:00 a.m. and 7:00 p.m. on weekdays and 8:00 a.m. to 4:00 p.m. on Saturdays, in accordance with the City of Moreno Valley Municipal Code, Sections 8.14.040 and 11.80.030, with the exception of nighttime construction work that would occur at the intersection of Indian Street and Sunnymead Boulevard.
- Prior to construction, the District, in coordination with the construction contractor, shall provide written notification to all properties within 50 feet of the proposed project facilities informing occupants of the type and duration of construction activities. The District's Public and Governmental Affairs staff will prepare notification materials and will provide public outreach. Notification materials shall identify a method to contact the District's program manager with noise concerns. Prior to construction commencement, the District program manager shall establish a noise complaint process to allow for resolution of noise problems. This process shall be clearly described in the notifications.
- Stationary noise-generating equipment shall be located as far from sensitive receptors as possible. Such equipment shall also be oriented to minimize noise that would be directed toward sensitive receptors. Whenever possible, other non-noise generating equipment (e.g., roll-off dumpsters) shall be positioned between the noise source and sensitive receptors.
- Equipment and staging areas shall be located as far from sensitive receptors as possible. At the staging location, equipment and materials shall be kept as far from adjacent sensitive receptors as possible.
- Construction vehicles and equipment shall be maintained in the best possible working order; shall be operated by an experienced, trained operator; and shall utilize the best available noise control techniques (including mufflers, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds).
- Unnecessary idling of internal combustion engines shall be prohibited. In practice, this would require turning off equipment if it would idle for five or more minutes.
- Electrically powered equipment shall be used instead of pneumatic or internal combustion powered equipment, where feasible.
- The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only.

4.14 Population and Housing

Would the proposed project:

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

EXPLANATIONS:

a. Less Than Significant Impact

The proposed project is limited to construction of a sewer pipeline and would not introduce any residential, commercial, or other uses. The proposed project would replace an existing sewer pipeline to accommodate the Festival Specific Plan development and future developments in surrounding areas. As such, the project would meet existing and future demand for planned development and would not provide for excess capacity that could induce growth. Therefore, the proposed project would not induce substantial unplanned population growth either directly or indirectly, and impacts would be less than significant.

b. No Impact

The proposed project is limited to construction of a sewer pipeline and would not impact any existing residential structures. Therefore, the proposed project would not displace any existing people or housing. No impact would occur.

4.15 Public Services

Would the proposed project:

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

EXPLANATIONS:

a.i. No Impact

The proposed project is limited to replacement of an existing sewer pipeline alignment and would not introduce any residential, commercial, or other uses that would require fire protection services. The proposed project would replace an existing sewer pipeline to accommodate the Festival Specific Plan development and future developments in surrounding areas. As such, the project would meet existing and future demand for planned development and would not provide for excess capacity that could induce growth that would require fire protection services. Therefore, the proposed project would not require new or expanded fire protection facilities. No impact would occur.

a.ii. No Impact

The proposed project is limited to replacement of an existing sewer pipeline alignment and would not introduce any residential, commercial, or other uses that would require police protection services. The proposed project would replace an existing sewer pipeline to accommodate the Festival Specific Plan development and future developments in surrounding areas. As such, the project would meet existing and future demand for planned development and would not provide for excess capacity

that could induce growth that would require police protection services. Therefore, the proposed project would not require new or expanded police protection facilities. No impact would occur.

a.iii. No Impact

The proposed project is limited to replacement of an existing sewer pipeline alignment and would not introduce any residential uses that would generate any student enrollment that would increase demand for school services. The proposed project would replace an existing sewer pipeline to accommodate the Festival Specific Plan development and future developments in surrounding areas. As such, the project would meet existing and future demand for planned development and would not provide for excess capacity that could induce growth that would require school services. Therefore, the proposed project would not require new or expanded school facilities. No impact would occur.

a.iv. No Impact

The proposed project is limited to replacement of an existing sewer pipeline alignment and would not introduce any residential uses that would increase demand for parks. The proposed project would replace an existing sewer pipeline to accommodate the Festival Specific Plan development and future developments in surrounding areas. As such, the project would meet existing and future demand for planned development and would not provide for excess capacity that could induce growth that would increase demand for parks. Therefore, the proposed project would not require new or expanded park facilities. No impact would occur.

a.v. No Impact

Other public facilities include libraries and government administrative services. The proposed project is limited to replacement of an existing sewer pipeline alignment and would not introduce any residential, commercial, or other uses that would require additional public services. The proposed project would replace an existing sewer pipeline to accommodate the Festival Specific Plan development and future developments in surrounding areas. As such, the project would meet existing and future demand for planned development and would not provide for excess capacity that could induce growth that would increase demand for other public facilities. Therefore, the proposed project would not require new or expanded public facilities. No impact would occur.

4.16 Recreation

Would the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b. Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	☒

EXPLANATIONS:

a. No Impact

The proposed project would not introduce any residential uses that would increase demand for parks. The proposed project would replace an existing sewer pipeline alignment to accommodate the Festival Specific Plan development and future developments in surrounding areas. As such, the project would meet existing and future demand for planned development and would not provide for excess capacity that could induce growth that would increase demand for parks Therefore, to the project would not increase the use of existing neighborhood and regional parks or other recreational facilities. No impact would occur.

b. No Impact

The proposed project is limited to a sewer pipeline extension and would not include recreational facilities or require the construction or expansion of recreational facilities. No impact would occur.

4.17 Transportation/Traffic

Would the proposed project:

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

EXPLANATIONS:

a. Less Than Significant Impact

The proposed project is limited to construction of sewer pipelines and would not introduce any residential, commercial, or other uses that would generate vehicle trips. Operational traffic trips would be limited to periodic maintenance and inspection that would not affect intersection and roadway operations. Vehicle trips associated with project construction would be minimal and would not affect intersection and roadway segment operations on the surrounding roadway network.

A TCP would be submitted to the City for approval prior to construction. To allow the coordination of daily construction activity, the TCP would include measures to ensure that traffic conditions are maintained as near normal as practicable. Such measures would likely include standard efforts such as the use of cones, barriers, signs, and flaggers, where applicable. The proposed project would generate vehicle trips during construction in the form of haul trucks and worker commute vehicles; however, the number of vehicles generated would be limited and would not likely result in congestion on nearby roadways. Roadways would be restored to preexisting conditions once construction is completed.

A bus stop for Route 19 is located approximately 100 feet west of the project site intersection of Indian Street and Sunnymead Boulevard. The TCP would identify measures to maintain access for Route 19 during construction. Furthermore, construction would not occur within sidewalks, and the

TCP would assure that pedestrian access would be maintained along Indian Street and Sunnymead Boulevard. Cyclists using bicycle lanes located along Sunnymead Boulevard would likely be redirected via measures within the TCP. Roadways would be restored to preexisting conditions once construction is completed. Therefore, the project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, and impacts would be less than significant.

b. Less Than Significant Impact

The proposed project would not result in any changes to the amount of travel required for local residents. Therefore, preparation of a Vehicle Miles Traveled (VMT) Analysis per CEQA Guidelines Section 15064.3, subdivision (b) was not required, and impacts would be less than significant.

c. Less Than Significant Impact

The proposed project is limited to construction of sewer pipelines and would not result in any permanent changes to the existing circulation network. Construction within the right-of-way for SR-60, Indian Street, and Sunnymead Boulevard would be temporary and include traffic control measures to allow continued access. Roadways would be restored to preexisting conditions once construction is completed. Therefore, the proposed project would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses, and impacts would be less than significant.

d. Less Than Significant Impact

Construction within the right-of-way of SR-60, Indian Street, and Sunnymead Boulevard would be temporary and would include a TCP to allow continued access. Roadways would be restored to preexisting conditions once construction is completed. As described in Section 4.17a, vehicle trips generated during construction and operation would not affect intersection and roadway operations. Therefore, the proposed project would not result in inadequate emergency access to or from the project site, and impacts would be less than significant.

4.18 Tribal Cultural Resources

Would the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. 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)?	☐	☐	☐	☒
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☒	☐	☐

EXPLANATIONS:

a.i. Less than Significant

AB 52 establishes a formal consultation process between the lead agency, the District, and all California Native American tribes within the area regarding tribal cultural resource evaluation. AB 52 mandates that the lead agency must provide formal written notification to the designated contact of traditionally and culturally affiliated California Native American tribes that have previously requested notice. Native American tribes are notified early in the project review phase by written notification that includes a brief description of the proposed project, location, and the lead agency's contact information. The tribal contact then has 30 days to request project-specific consultation pursuant to this section (Public Resources Code Section 21080.1).

As a part of the consultation pursuant Public Resources Code Section21080.3.1(b), both parties may suggest mitigation measures (Public Resources Code Section 21082.3) that can avoid or substantially lessen potential significant impacts to tribal cultural resources or provide alternatives that would avoid significant impacts to a tribal cultural resource. The California Native American tribe may request consultation on mitigation measures, alternatives to the proposed project, or significant effects. The consultation may also include discussion on the environmental review, the significance of tribal cultural resources, the significance of the proposed project's impact on the tribal cultural resources, project alternatives, or the measures planned to preserve or mitigate impacts on resources. Consultation shall end when either (1) both parties agree on the mitigation measures to avoid or mitigate significant effects on a tribal cultural resource or (2) a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached.

Per AB 52, the District initiated consultation with Native American tribes that are traditionally and culturally affiliated with the geographic area of the proposed project to identify resources of cultural or spiritual value to the tribe.

On October 13, 2023, EMWD sent consultation notification letters to Native American tribes on the District's Master List pursuant to the requirements of AB 52 pertaining to government-to-government consultation. Table 14 summarizes the District's consultation efforts. To date, EMWD has conducted consultation with one federally recognized Native American tribe, the Agua Caliente Band of Cahuilla Indians (Agua Caliente). An additional five Native American tribes were contacted but declined consultation or did not respond, as noted in Table 14.

Table 14
Assembly Bill 52 Consultation

Tribe	Individual Contacted	Date Letter Mailed	Response Received	Consultation Held
Agua Caliente	Pattie Garcia	10/13/2023	10/18/2023	01/18/2024
Morongo	Laura Chatterton	10/13/2023	DNR	N/A
Pechanga	Ebru Ozdil	10/13/2023	DNR	N/A
Rincon	Cheryl Madrigal	10/13/2023	12/21/2023	Declined
San Manuel	Alexandra McCleary	10/13/2023	11/16/2023	Declined
Soboba	Joe Ontiveros	10/13/2023	DNR	N/A

DNR = Did not respond; N/A = Consultation was not requested.

As described in Section 4.5(a) above, the records search completed for the project indicated that two cultural resources have been recorded within one mile of the project APE. However, the two previously recorded cultural resources are historic-era resources comprising of a concrete foundation along with a utility pole and a fragment of glass and a trash dump. No previously recorded cultural resources are located within the project APE. Therefore, the proposed project would not cause a substantial adverse change to a tribal cultural resource that would qualify or be eligible for listing in the California Register of Historical Resources or the local register of historical resources in accordance with the Public Resources Code Section 5020.1(k). No impact would occur.

a.ii. Potentially Significant Unless Mitigation Incorporated

During the consultation meeting with the Agua Caliente Tribe on November 8, 2023, the Agua Caliente Tribe highlighted their concerns for the general area noting that it is within Traditional Use Areas and considered sensitive as there are existing sites in the surrounding areas. The tribe expressed concern with potential unearthing of unknown artifacts during grading, which would be considered significant. Implementation of mitigation measures TRIBAL-1 through TRIBAL-4 would reduce potential impacts to tribal cultural resources to a level less than significant.

MITIGATION MEASURES

TRIBAL-1 Tribal Resources Monitoring Agreement

At least 30 days prior to the start of ground-disturbing activities, the District shall contact the Consulting Tribe(s) to develop a Cultural Resources Treatment Monitoring Agreement (Agreement). The Agreement shall address the treatment of archaeological resources that may be tribal cultural resources inadvertently discovered on the project site; project grading; ground disturbance and development scheduling; the designation, responsibilities, and participation of tribal monitor(s) during grading, excavation, and ground disturbing activities; and compensation for the tribal monitors, including overtime, weekend rates, and mileage reimbursement.

TRIBAL-2 Tribal Monitoring

Prior to the start of ground-disturbing activities, a tribal monitor may participate in the construction workers archaeological resources sensitivity training, conducted by the project archaeologist. At least seven business days prior to ground-disturbing activities, the District shall notify the tribe of the grading/excavation schedule and coordinate the tribal monitoring schedule.

A tribal monitor shall be present for ground-disturbing activities associated with the proposed project. Both the project archaeologist and tribal monitor working together will determine the areas with a potential for encountering potential tribal cultural resources. Both the archaeologist and tribal monitor shall have the authority to stop and redirect grading activities in order to evaluate the nature and significance of any archaeological resources discovered within the project limits. Such evaluation shall include culturally appropriate temporary and permanent treatment pursuant to the Cultural Resources Treatment and Monitoring Agreement (Agreement), which may include avoidance of tribal cultural resources, in-place preservation, data recovery, and/or reburial so the resources are not subject to further disturbance in perpetuity. Any reburial shall occur at a location determined between the District and the consulting tribe as described in mitigation measure **TRIBAL-4**.

Treatment may also include curation of the resources at a tribal curation facility or an archaeological curation facility, as determined in discussion among the District, the tribe, and the project archaeologist as addressed in the Agreement. The on-site tribal monitoring shall end when all ground-disturbing activities on the project site are completed, or when the tribal representatives and tribal monitor have indicated that the project site has little or no potential for impacting tribal cultural resources.

TRIBAL-3 Disposition of Inadvertent Discoveries

In the event that tribal cultural resources are recovered during the course of grading, the District shall relinquish ownership of all cultural resources, including sacred items, burial goods, archaeological artifacts, and non-human remains. The District will coordinate with the project archaeologist and the tribe to conduct analysis of recovered resources. If it is determined that the resource is a Native American resource and thus significant under CEQA, avoidance of the resource will be explored as the preferred option and on-site reburial will be evaluated as the second option. If avoidance and on-site reburial are not possible, a treatment plan shall be prepared with state guidelines and in consultation with the tribe. The treatment plan may include, but would not be limited to capping in place, excavation and removal of the resource, interpretive displays, sensitive area signage, or other mutually agreed upon measures. Treatment may also include curation of the cultural resources at a tribal curation facility, as determined by the District and the consulting tribe.

TRIBAL-4 Non-Disclosure of Reburial Locations

It is understood by all parties that unless otherwise required by law, the site of any reburial of culturally sensitive resources shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The coroner, pursuant to the specific exemption set forth in California Government Code 6254(r), parties, and lead agencies will be asked to withhold public disclosure information related to such reburial.

4.19 Utilities and Service Systems

Would the proposed project:

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

EXPLANATIONS:

a. No Impact

The proposed project is limited to replacement of an existing sewer pipeline alignment and would not introduce any residential, commercial, or other uses that would require expanded water or wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities. The proposed project would replace an existing sewer pipeline alignment to accommodate the Festival Specific Plan development and future developments in surrounding areas. Therefore, the proposed project would not result in increased utilities demand that would cause significant environmental effects. No impact would occur.

b. No Impact

The proposed project is limited to replacement of an existing sewer pipeline alignment and would not introduce any residential, commercial, or other uses that would require water supply. The proposed project would replace an existing sewer pipeline alignment to accommodate the Festival Specific Plan development and future developments in surrounding areas. Water consumption would be limited to small amounts during construction. Therefore, the proposed project would have sufficient water supplies available to serve the project, and no impacts would occur.

c. No Impact

The proposed project is limited to replacement of an existing sewer pipeline alignment and would not introduce any residential, commercial, or other uses that would require expanded wastewater treatment capacity. The proposed project would replace an existing sewer pipeline alignment to accommodate the Festival Specific Plan development and future developments in surrounding areas. Therefore, the proposed project would not exceed existing wastewater treatment capacity and would accommodate existing and planned growth in the City. No impact would occur.

d. Less Than Significant Impact

Project construction would generate small amounts of waste that would likely be disposed of at either the Badlands Sanitary Landfill in Moreno Valley, the Lamb Canyon Landfill in Beaumont, or the El Sobrante Landfill in Corona. The Badlands Landfill has a remaining capacity of 15,748,799 cubic yards and a maximum permitted throughput of 4,800 tons per day, the Lamb Canyon Landfill has a remaining capacity of 19,242,950 cubic yards and a maximum permitted throughput of 5,000 tons per day, and the El Sobrante Landfill has a remaining capacity of 3,271,203 cubic yards and a maximum permitted throughput of 400 tons per day (California Department of Resources Recycling and Recovery 2023). All three landfills would have sufficient capacity to accommodate the small amounts of waste that would be generated during construction. Operation of the proposed project would not generate any solid waste. Therefore, the proposed project would not generate solid waste in excess of state or local standards or in excess of the capacity of local infrastructure, and impacts would be less than significant.

e. Less Than Significant Impact

As described in Section 4.19d, the proposed project would generate small amounts of waste during construction that would be disposed of at either the Badlands Sanitary Landfill, the Lamb Canyon Landfill, or the El Sobrante Landfill, which all have adequate capacity. The proposed project would also comply with local regulations pertaining to recycling of construction waste. Operation of the

proposed project would not generate any solid waste. Therefore, the proposed project would comply with federal, state, and local statutes and regulation related to solid waste, and impacts would be less than significant.

4.20 Wildfire

Would the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

EXPLANATIONS:

a. Less Than Significant Impact

Construction within the right-of-way of SR-60, Indian Street, and Sunnymead Boulevard would be temporary, and a TCP would be required to ensure that traffic conditions are maintained. Roadways would be restored to preexisting conditions once construction is completed. Therefore, the proposed

project would not impair an adopted emergency response plan or emergency evacuation plan, and impacts would be less than significant.

b. Less than Significant Impact

As described in Section 4.9, the project site is not located in a High Fire Hazard Severity Zone as identified in Map S-5 of the Safety Element of the 2040 General Plan (City of Moreno Valley 2021). In addition, the proposed project would not introduce any habitable structures that could expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Human presence would be limited to temporary construction and periodic maintenance. Upon completion of pipeline construction, roadways would be restored to preexisting conditions. Therefore, the project would not exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Impacts would be less than significant.

c. No Impact

As described in Section 4.9, the project site is not located in a High Fire Hazard Severity Zone as identified in Map S-5 of the Safety Element of the 2040 General Plan (City of Moreno Valley 2021). In addition, the proposed project is limited to a sewer pipeline replacement and would not require any additional infrastructure. The pipeline would be installed underground, and roadways would be restored to preexisting conditions once construction is completed. Therefore, the proposed project would not 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 would occur.

d. No Impact

As described in Section 4.9, the project site is not located in a High Fire Hazard Severity Zone as identified in Map S-5 of the Safety Element of the 2040 General Plan (City of Moreno Valley 2021). In addition, the proposed project would not introduce any habitable structures that could expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Human presence would be limited to temporary construction and periodic maintenance. Upon completion of pipeline construction, roadways would be restored to preexisting conditions. Further, the project site is not located within a Federal Emergency Management Agency floodplain or floodway as identified in Exhibit S-4, Flood Hazard Areas, in the City's 2040 General Plan. Therefore, the proposed project would not expose people or structures to significant risks, including downslope or down-stream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. No impact would occur.

4.21 Mandatory Findings of Significance

Does the proposed project:

Issue	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b. 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 futures projects)?	☐	☒	☐	☐
c. Have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

EXPLANATIONS:

a. Potentially Significant Unless Mitigation Incorporated

As described in Section 4.4a, implementation of mitigation measure BIO-1 would reduce potential impacts to migratory and nesting birds to a level less than significant. In addition, as described in Section 4.4c, implementation of mitigation measure BIO-2 would reduce potential impacts to jurisdictional features to a level less than significant. The proposed project does not have the

potential to result in any other impacts that would 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, or substantially reduce the number or restrict the range of a rare or endangered plant or animal. As described in Section 4.5, implementation of mitigation measure CUL-1 would reduce potential impacts to human remains to a level less than significant. Further, as described in Section 4.18, implementation of mitigation measures TRIBAL-1 through TRIBAL-4 would reduce potential impacts to tribal cultural resources to a level less than significant.

b. Potentially Significant Unless Mitigation Incorporated

As described in the Draft IS/MND, all potential impacts would be mitigated to a level less than significant. Air quality is a regional issue and the cumulative study area for air quality impacts encompasses the SCAB as a whole. Therefore, the cumulative analysis addresses regional air quality plans and policies, such as the NAAQS, CAAQS, and SCAQMD 2016 AQMP as well as the project's contribution to a net increase of any criteria pollutant for which the SCAB is listed as a non-attainment area. As described in Section 4.3a, the proposed project does not include growth-generating components, but rather would provide sewer service to existing development. As such, the proposed project would be consistent with growth projections contained in the Moreno Valley General Plan and AQMP forecasts. Based on these considerations and pursuant to SCAQMD guidelines, project-related emissions are accounted for in the AQMP. Therefore, the proposed project would not conflict with or obstruct implementation of the applicable air quality plan. As described in Section 4.4, the project site is within the Western Riverside MSHCP but not located within or adjacent to a designated conservation subunit, Criteria Cell, or sensitive species survey area identified by the MSHCP (RCA 2003). As such, the proposed project would not contribute a cumulative impact to biological resources. As described in Section 4.5, implementation of mitigation measure CUL-1 would reduce potential impacts to human remains to a level less than significant and as described in Section 4.18, implementation of mitigation measures TRIBAL-1 through TRIBAL-4 would reduce potential impacts to tribal cultural resources to a level less than significant, thereby avoiding cumulative impacts. As described in Section 4.7, implementation of mitigation measure PAL-1 would reduce potential impacts to paleontological resources to a level less than significant, thereby avoiding cumulative impacts. As described in Section 4.13, mitigation measure NOI-1 would reduce noise generated by daytime construction activities to a level less than significant, thereby avoiding cumulative impacts. As described throughout the Draft IS/MND, all other project-level impacts not requiring mitigation would be less than significant or have no impact. Therefore, the project would not result in any project-level significant impacts that could contribute to an existing cumulative impact on the environment.

c. Less Than Significant Impact

As described in Sections 4.1 through 4.20, the proposed project would not result in any substantial adverse direct or indirect impacts to human beings. Therefore, impacts would be less than significant.

6.0 Preparers

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Frank McDermott, GIS Specialist
Loretta Gross, Production Supervisor
Stacey Higgins, Senior Production Specialist

7.0 Sources Consulted

Aesthetics

California Department of Transportation (Caltrans)
2023 California State Scenic Highway Scenic Map. Accessed November 22, 2023. https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa.

Moreno Valley, City of
2021 City of Moreno Valley General Plan 2040. Adopted June 15. Prepared by Dyett & Bhatia. https://www.moval.org/city_hall/general-plan2040/MV-GeneralPlan-complete.pdf .

Agriculture and Forestry Resources

California Department of Conservation
2022 California Important Farmland Finder. Accessed November 17, 2023. https://maps.conservation.ca.gov/dlrp/ciff/.

Air Quality

Bay Area Air Quality Management District
2017 California Environmental Quality Act Air Quality Guidelines. May.

Office of Environmental Health Hazard Assessment (OEHHA)
2015 Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments (Guidance Manual), February.

Sacramento Metropolitan Air Quality Management District (SMAQMD)
2022 Road Construction Emissions Model, Version 9.0.1.

South Coast Air Quality Management District (SCAQMD)
1993 SCAQMD CEQA Air Handbook. November.

2008 Final Localized Significance Threshold Methodology. July.

2015 SCAQMD Air Quality Significance Thresholds. Updated March 2015.

Urban Crossroads
2022 Quail Hill (TTM No. 37692) Traffic Study. Revised February 2022. https://ceqanet.opr.ca.gov/2022100107.

Biology

Western Riverside County Regional Conservation Authority [RCA]
2003 Final Western Riverside County Multiple Species Habitat Conservation Plan.

California Department of Fish and Wildlife (CDFW)
2023 Natural Diversity Database. Nongame-Heritage Program, California Department of Fish and Wildlife, Sacramento. RareFind Version 5.2.14. Accessed January.

Geology and Soils

California Geological Survey (CGS)
2022 CGS Earthquake Zones. https://maps.conservation.ca.gov/cgs/EQZApp/ .

Define Civil
2022 Expansive Soils – Identification – Types – Fixing – Properties -Examples. https://definecivil.com/expansive-soils/.

Moreno Valley, City of
2021 City of Moreno Valley General Plan 2040. Adopted June 15. Prepared by Dyett & Bhatia. https://www.moval.org/city_hall/general-plan2040/MV-GeneralPlan-complete.pdf

Greenhouse Gas Emissions

South Coast Air Quality Management District (SCAQMD)
2008 Interim CEQA GHG Significance Thresholds for Stationary Sources, Rules, and Plans.

2009 Greenhouse Gas CEQA Significance Threshold Stakeholder Working Group 14. https://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-14/ghg-meeting-14-main-presentation.pdf.

2010 Greenhouse Gas CEQA Significance Thresholds Stakeholder Working Group 15. September 28. https://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf.

Hazards and Hazardous Materials

Department of Toxic Substances Control
2023 EnviroStor. https://www.envirostor.dtsc.ca.gov/public/.

State Water Resources Control Board
2023 GeoTracker. https://geotracker.waterboards.ca.gov/.

Moreno Valley, City of
2021 City of Moreno Valley General Plan 2040. Adopted June 15. Prepared by Dyett & Bhatia. https://www.moval.org/city_hall/general-plan2040/MV-GeneralPlan-complete.pdf.

Mineral Resources

Moreno Valley, City of
2021 Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update, Housing Element Update, and Climate Action Plan. SCH # 2020039022, May 20.

Noise

California Department of Transportation (Caltrans)
2013 Technical Noise Supplement. November.

Federal Highway Administration (FHWA)
2006 Roadway Construction Noise Model User's Guide. FHWA-HEP-05-054, SOT-VNTSC-FHWA-05-01. Final Report. January.

Federal Transit Administration (FTA)
2006 Transit Noise and Vibration Impact Assessment. Washington, DC. May.

Utilities and Service Systems

California Department of Resources Recycling and Recovery (CalRecycle)
2023 Solid Waste Information System. https://www2.calrecycle.ca.gov/SolidWaste/.

Wildfire

Moreno Valley, City of
2021 City of Moreno Valley General Plan 2040. Adopted June 15. Prepared by Dyett & Bhatia. https://www.moval.org/city_hall/general-plan2040/MV-GeneralPlan-complete.pdf.

Mandatory Findings

Moreno Valley, City of

2021 City of Moreno Valley General Plan 2040. Adopted June 15. Prepared by Dyett & Bhatia. https://www.moval.org/city_hall/general-plan2040/MV-GeneralPlan-complete.pdf.

APPENDICES

APPENDIX A

Air Quality and Greenhouse Gas Calculations

Road Construction Emissions Model, Version 9.0.1

Daily Emission Estimates for -> Indian Street Sewer Crossing

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	3.61	42.06	30.30	6.36	1.36	5.00	2.33	1.29	1.04	0.09	8,105.90	1.72	0.07	8,170.79
Grading/Excavation	3.70	43.34	30.41	6.42	1.42	5.00	2.35	1.31	1.04	0.09	8,515.96	1.73	0.08	8,583.99
Drainage/Utilities/Sub-Grade	3.66	42.83	30.36	6.39	1.39	5.00	2.34	1.30	1.04	0.09	8,351.94	1.72	0.08	8,418.71
Paving	3.64	42.49	30.34	1.38	1.38	0.00	1.30	1.30	0.00	0.09	8,242.59	1.72	0.08	8,308.52
Maximum (pounds/day)	3.70	43.34	30.41	6.42	1.42	5.00	2.35	1.31	1.04	0.09	8,515.96	1.73	0.08	8,583.99
Total (tons/construction project)	0.32	3.78	2.67	0.50	0.12	0.37	0.19	0.11	0.08	0.01	737.86	0.15	0.01	743.76

Notes:

Project Start Year ->	2024
Project Length (months) ->	8
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	5
Grading/Excavation	0	0	0	0	800	5
Drainage/Utilities/Sub-Grade	0	0	0	0	560	5
Paving	0	0	0	0	400	5

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Indian Street Sewer Crossing

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.03	0.37	0.27	0.06	0.01	0.04	0.02	0.01	0.01	0.00	71.33	0.02	0.00	65.23
Grading/Excavation	0.15	1.72	1.20	0.25	0.06	0.20	0.09	0.05	0.04	0.00	337.23	0.07	0.00	308.38
Drainage/Utilities/Sub-Grade	0.10	1.13	0.80	0.17	0.04	0.13	0.06	0.03	0.03	0.00	220.49	0.05	0.00	201.63
Paving	0.05	0.56	0.40	0.02	0.02	0.00	0.02	0.02	0.00	0.00	108.80	0.02	0.00	99.49
Maximum (tons/phase)	0.15	1.72	1.20	0.25	0.06	0.20	0.09	0.05	0.04	0.00	337.23	0.07	0.00	308.38
Total (tons/construction project)	0.32	3.78	2.67	0.50	0.12	0.37	0.19	0.11	0.08	0.01	737.86	0.15	0.01	674.73

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 9.0.1**

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Indian Street Sewer Crossing	
Construction Start Year	2024	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	8.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.22	miles
Total Project Area	1.60	acres
Maximum Area Disturbed/Day	0.50	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County. NEW LINK 8-2-2022.

https://maps.conservation.ca.gov/cgs/gmc/

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.80		1/1/2024
Grading/Excavation		3.60		1/26/2024
Drainage/Utilities/Sub-Grade		2.40		5/15/2024
Paving		1.20		7/27/2024
Totals (Months)	8			

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00			0	0.00
Miles/round trip: Grading/Excavation	30.00			0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade	30.00			0	0.00
Miles/round trip: Paving	30.00			0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00			0	0.00
Miles/round trip: Grading/Excavation	30.00			0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade	30.00			0	0.00
Miles/round trip: Paving	30.00			0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker			
User Input	Commute Default Values	Default Values		
Miles/ one-way trip	20		Calculated	Calculated
One-way trips/day	2		Daily Trips	Daily VMT
No. of employees: Grubbing/Land Clearing	5		10	200.00
No. of employees: Grading/Excavation	20		40	800.00
No. of employees: Drainage/Utilities/Sub-Grade	14		28	560.00
No. of employees: Paving	10		20	400.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Grading/Excavation (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Draining/Utilities/Sub-Grade (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Paving (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Grubbing/Land Clearing (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Grading/Excavation (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Draining/Utilities/Sub-Grade (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Paving (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.03	0.43	0.03	0.02	0.01	0.00	136.69	0.00	0.00	137.73
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00	1.21
Pounds per day - Grading/Excavation	0.11	1.71	0.14	0.08	0.03	0.01	546.75	0.01	0.01	550.93
Tons per const. Period - Grading/Excavation	0.00	0.07	0.01	0.00	0.00	0.00	21.65	0.00	0.00	21.82
Pounds per day - Drainage/Utilities/Sub-Grade	0.08	1.20	0.09	0.06	0.02	0.00	382.72	0.01	0.01	385.65
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.03	0.00	0.00	0.00	0.00	10.10	0.00	0.00	10.18
Pounds per day - Paving	0.06	0.86	0.07	0.04	0.02	0.00	273.37	0.01	0.01	275.46
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	3.61	0.00	0.00	3.64
Total tons per construction project	0.01	0.11	0.01	0.01	0.00	0.00	36.57	0.00	0.00	36.85

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of	Program Estimate of	User Override of Truck	Default Values	Calculated	User Override of	Default Values	Calculated
User Input	Default # Water Trucks	Number of Water Trucks	Round Trips/Vehicle/Day	Round Trips/Vehicle/Day	Trips/day	Miles/Round Trip	Miles/Round Trip	Daily VMT
Grubbing/Land Clearing - Exhaust	1		1.00			5.00		5.00
Grading/Excavation - Exhaust	1		1.00			5.00		5.00
Drainage/Utilities/Subgrade	1		1.00			5.00		5.00
Paving	1		1.00			5.00		5.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.04	0.00	0.00	0.00	18.67	0.00	0.00	19.54
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.17
Pounds per day - Grading/Excavation	0.00	0.00	0.04	0.00	0.00	0.00	18.67	0.00	0.00	19.54
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.00	0.00	0.77
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.04	0.00	0.00	0.00	18.67	0.00	0.00	19.54
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.52
Pounds per day - Paving	0.00	0.00	0.04	0.00	0.00	0.00	18.67	0.00	0.00	19.54
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.26
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	1.64	0.00	0.00	1.72

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			5.00	0.04	1.04	0.01
Fugitive Dust - Grading/Excavation			5.00	0.20	1.04	0.04
Fugitive Dust - Drainage/Utilities/Subgrade			5.00	0.13	1.04	0.03

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Air Compressors	0.24	2.41	1.63	0.08	0.08	0.00	375.26	0.02	0.00	376.63
2.00			Model Default Tier	Bore/Drill Rigs	0.42	4.08	3.80	0.13	0.12	0.02	1,834.73	0.59	0.02	1,854.52
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Concrete/Industrial Saws	0.31	3.65	2.41	0.11	0.11	0.01	592.67	0.03	0.00	594.70
1.00			Model Default Tier	Cranes	0.33	1.77	3.50	0.15	0.13	0.01	558.81	0.18	0.01	564.83
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Excavators	0.18	3.27	1.40	0.07	0.06	0.01	500.27	0.16	0.00	505.66
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Generator Sets	0.29	3.66	2.54	0.11	0.11	0.01	623.04	0.03	0.00	625.06
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Off-Highway Tractors	0.35	6.03	2.88	0.14	0.13	0.01	910.50	0.29	0.01	920.31
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.18	2.89	1.74	0.08	0.07	0.00	455.16	0.15	0.00	460.07
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Pumps	0.61	7.44	5.16	0.23	0.23	0.01	1,246.07	0.05	0.01	1,250.23
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Sweepers/Scrubbers	0.17	1.92	1.61	0.10	0.09	0.00	246.18	0.08	0.00	248.83
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.14	2.24	1.45	0.07	0.06	0.00	301.77	0.10	0.00	305.01
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Welders	0.24	1.66	1.38	0.05	0.05	0.00	207.48	0.02	0.00	208.52

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	3.59	41.62	30.23	1.34	1.28	0.08	7,950.55	1.72	0.07	8,013.52
Grubbing/Land Clearing	tons per phase	0.03	0.37	0.27	0.01	0.01	0.00	69.96	0.02	0.00	70.52

Grading/Excavation	Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Air Compressors	0.24	2.41	1.63	0.08	0.08	0.00	375.26	0.02	0.00	376.63
2.00			Model Default Tier	Bore/Drill Rigs	0.42	4.08	3.80	0.13	0.12	0.02	1,834.73	0.59	0.02	1,854.52
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Concrete/Industrial Saws	0.31	3.65	2.41	0.11	0.11	0.01	592.67	0.03	0.00	594.70
1.00			Model Default Tier	Cranes	0.33	1.77	3.50	0.15	0.13	0.01	558.81	0.18	0.01	564.83
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Excavators	0.18	3.27	1.40	0.07	0.06	0.01	500.27	0.16	0.00	505.66
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Generator Sets	0.29	3.66	2.54	0.11	0.11	0.01	623.04	0.03	0.00	625.06
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Off-Highway Tractors	0.35	6.03	2.88	0.14	0.13	0.01	910.50	0.29	0.01	920.31
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.18	2.89	1.74	0.08	0.07	0.00	455.16	0.15	0.00	460.07
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Pumps	0.61	7.44	5.16	0.23	0.23	0.01	1,246.07	0.05	0.01	1,250.23
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Sweepers/Scrubbers	0.17	1.92	1.61	0.10	0.09	0.00	246.18	0.08	0.00	248.83
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.14	2.24	1.45	0.07	0.06	0.00	301.77	0.10	0.00	305.01
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Welders	0.24	1.66	1.38	0.05	0.05	0.00	207.48	0.02	0.00	208.52

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grading/Excavation	pounds per day	3.59	41.62	30.23	1.34	1.28	0.08	7,950.55	1.72	0.07	8,013.52
Grading/Excavation	tons per phase	0.14	1.65	1.20	0.05	0.05	0.00	314.84	0.07	0.00	317.34

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Air Compressors	0.24	2.41	1.63	0.08	0.08	0.00	375.26	0.02	0.00	376.63
2.00			Model Default Tier	Bore/Drill Rigs	0.42	4.08	3.80	0.13	0.12	0.02	1,834.73	0.59	0.02	1,854.52
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Concrete/Industrial Saws	0.31	3.65	2.41	0.11	0.11	0.01	592.67	0.03	0.00	594.70
1.00			Model Default Tier	Cranes	0.33	1.77	3.50	0.15	0.13	0.01	558.81	0.18	0.01	564.83
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Excavators	0.18	3.27	1.40	0.07	0.06	0.01	500.27	0.16	0.00	505.66
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Generator Sets	0.29	3.66	2.54	0.11	0.11	0.01	623.04	0.03	0.00	625.06
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Off-Highway Tractors	0.35	6.03	2.88	0.14	0.13	0.01	910.50	0.29	0.01	920.31
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.18	2.89	1.74	0.08	0.07	0.00	455.16	0.15	0.00	460.07
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Pumps	0.61	7.44	5.16	0.23	0.23	0.01	1,246.07	0.05	0.01	1,250.23
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Sweepers/Scrubbers	0.17	1.92	1.61	0.10	0.09	0.00	246.18	0.08	0.00	248.83
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.14	2.24	1.45	0.07	0.06	0.00	301.77	0.10	0.00	305.01
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Welders	0.24	1.66	1.38	0.05	0.05	0.00	207.48	0.02	0.00	208.52

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day	3.59	41.62	30.23	1.34	1.28	0.08	7,950.55	1.72	0.07	8,013.52
Drainage/Utilities/Sub-Grade	tons per phase	0.09	1.10	0.80	0.04	0.03	0.00	209.89	0.05	0.00	211.56

Paving	Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Air Compressors	0.24	2.41	1.63	0.08	0.08	0.00	375.26	0.02	0.00	376.63
2.00			Model Default Tier	Bore/Drill Rigs	0.42	4.08	3.80	0.13	0.12	0.02	1,834.73	0.59	0.02	1,854.52
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Concrete/Industrial Saws	0.31	3.65	2.41	0.11	0.11	0.01	592.67	0.03	0.00	594.70
1.00			Model Default Tier	Cranes	0.33	1.77	3.50	0.15	0.13	0.01	558.81	0.18	0.01	564.83
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Excavators	0.18	3.27	1.40	0.07	0.06	0.01	500.27	0.16	0.00	505.66
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Generator Sets	0.29	3.66	2.54	0.11	0.11	0.01	623.04	0.03	0.00	625.06
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Off-Highway Tractors	0.35	6.03	2.88	0.14	0.13	0.01	910.50	0.29	0.01	920.31
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.18	2.89	1.74	0.08	0.07	0.00	455.16	0.15	0.00	460.07
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Pumps	0.61	7.44	5.16	0.23	0.23	0.01	1,246.07	0.05	0.01	1,250.23
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Sweepers/Scrubbers	0.17	1.92	1.61	0.10	0.09	0.00	246.18	0.08	0.00	248.83
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.14	2.24	1.45	0.07	0.06	0.00	301.77	0.10	0.00	305.01
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Welders	0.24	1.66	1.38	0.05	0.05	0.00	207.48	0.02	0.00	208.52

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Paving	pounds per day	3.59	41.62	30.23	1.34	1.28	0.08	7,950.55	1.72	0.07	8,013.52
Paving	tons per phase	0.05	0.55	0.40	0.02	0.02	0.00	104.95	0.02	0.00	105.78
Total Emissions all Phases (tons per construction period) =>		0.32	3.66	2.66	0.12	0.11	0.01	699.65	0.15	0.01	705.19

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84		8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		80		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

APPENDIX B

Biological Resources Survey Report

RECON

An Employee-Owned Company

November 21, 2023

Mr. Joseph Broadhead
Principal Water Resource Specialist
Eastern Municipal Water District
2270 Trumble Road
Perris, CA 92572

Reference: Biological Resources Survey for the Indian Street Sewer Replacement Project (RECON Number 9878-6)

Dear Mr. Broadhead:

This letter details the results of a biological resources survey conducted for the Eastern Municipal Water District's (District's) Indian Street Sewer Replacement Project (project). A biological constraints letter has been prepared to provide necessary information to the District for environmental analysis of the project (RECON 2022).

1.0 Introduction

1.1 Project Location

The project is located in the city of Moreno Valley, California (Figures 1 through Figure 2). The project includes a sewer alignment that parallels Indian Street and crosses under State Route 60 (SR-60). Regional access to the project site is provided via Hemlock Avenue north of SR-60 and Postal Avenue south of SR-60. The project site is in the U.S. Geological Survey (USGS) 7.5-minute Sunnymead quadrangle, Township 3 South, Range 3 West (USGS 1980; see Figure 2). The surrounding area contains developed roadways, residential and commercial development (Figure 3).

1.2 Project Description

The proposed project would replace an existing 350 feet of sewer pipeline to improve services in the area. Construction of a new 15-inch sewer pipeline will be installed crossing beneath SR-60 within a site recently developed for a hotel (Assessor Parcel Number 481-090-037). Activity on this site would include connection to an existing 12-inch pipeline constructed on the hotel parcel. A jack-and-bore pit would be constructed on the south border of this parcel near the SR-60 right-of-way to facilitate movement of the pipeline under SR-60 using trenchless technology. Once under SR-60, the pipeline would enter a District-owned parcel (Assessor Parcel Number 481-101-016) south of the freeway. The trenchless work would continue under an existing drainage channel on this parcel then continue southeast/south within an open-cut trench to Sunnymead Boulevard where it connects to existing infrastructure.

The existing 10-inch sewer pipeline running south through Indian Street and Sunnymead Boulevard intersection would be removed and replaced with a 15-inch vitrified clay pipe sewer. This would eliminate conflicts with a steel-encased, 18-inch waterline within the Indian Street/Sunnymead Boulevard intersection. Existing manholes within the Indian Street/Sunnymead Boulevard intersection would be reconstructed. The existing 10-inch sewer pipeline north of Sunnymead Boulevard would be abandoned in place and filled with grout. Conflicting portions of abandoned sewer pipeline would be removed as necessary and new manholes would be provided at all junction points.

1.3 Regional Context

The project is located within the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) area (Western Riverside County Regional Conservation Authority 2003; Figure 4). The MSHCP was designed to conserve approximately 500,000 acres of habitat, including 347,000 acres of existing conservation on public and quasi-public land and 153,000 acres of conservation on privately owned lands. Areas of privately owned lands considered for potential conservation are identified as Criteria Cells, which are intended to facilitate assessment of conservation potential under the MSHCP. In this way, the MSHCP directs future conservation efforts to occur within these Criteria Cells.

The surrounding area falls within the Western Riverside MSHCP; however, the project is not located within or adjacent to a designated conservation subunit, Criteria Cell, or sensitive species survey area identified by the MSHCP (Western Riverside County Regional Conservation Authority [RCA] 2003 and 2023; see Figure 4). In addition, the project has been designed to avoid potential riparian or riverine areas and incorporates best management practices to ensure that construction-related runoff and pollutants do not enter adjacent riparian or riverine areas. Thus, the project is consistent with the requirements contained in the MSHCP.

2.0 Methods

RECON Environmental, Inc. (RECON) biologist Andrew Smisek conducted a general biological survey within the survey area and a combined 100-foot buffer, on January 26, 2022. Mr. Smisek mapped vegetation communities, recorded vegetation, habitat characteristics, and noted wildlife and plant species apparent at the time of the survey. Vegetation communities were mapped in the field on a digital map of the survey area. Plants were visually identified in the field and wildlife species were identified visually with the aid of binoculars or based on identification of calls, scat, tracks, or burrows.

3.0 Background Research

RECON conducted a search of existing biological data for the project site, including a review of biological databases for sensitive plant and animal species reported within two miles of the project site, and a review of the project site's physical characteristics (e.g., location, elevation, soils/substrate, topography). Supplemental data sources included the California Natural Diversity Database (CNBBB; California Department of Fish and Wildlife [CDFW] 2023a), the All Species Occurrences Database (U.S. Fish and Wildlife Services [USFWS] 2023a), the California Native Plant Society (CNPS) online database (CNPS 2023), the MSHCP Informational Map (RCA 2023), and the U.S. Department of Agriculture (USDA) Soil Conservation Service maps and descriptions (USDA 1971 and 2023).

4.0 Results

4.1 Vegetation Communities

The project site supports five vegetation communities/land-cover types: mule fat scrub, non-native riparian, non-vegetated channel, disturbed habitat, and urban/developed (Figure 5). The acreages of these vegetation communities and land cover types are listed in Table 1 and described below. A complete list of plant species observed within the project site is included in Attachment 1.

Table 1 Vegetation Communities and Land Cover Types within Survey Area (acres)		
Land Cover and Vegetation Communities	Project Site	Survey Area (Project Site Plus 100-foot Buffer)
Mule Fat Scrub	-	0.07
Non-native Riparian	-	0.19
Non-vegetated Channel	-	0.02
Disturbed Habitat	1.17	3.57
Urban/Developed	0.43	8.02
TOTAL	**1.60**	**11.87**

Mule fat scrub occurs as a small patch along the banks of the drainage channel (see Figure 5). This vegetation community is dominated by mule fat (*Baccharis salicifolia*) and non-native brome grasses (*Bromus* spp.) with a small patch of Goodding's black willow (*Salix gooddingii*).

Non-native riparian occurs throughout the northern portion of the drainage channel (see Figure 5). This portion of the drainage contains Mexican fan palm (*Washingtonia robusta*), Siberian elm (*Ulmus pumila*), shamel ash (*Fraxinus uhdei*), and Mexican palo verde (*Parkinsonia aculeata*). This area also contains alternating vegetation density consisting of grasses (*Bromus* spp. and *Avena* sp.), short-pod mustard (*Hirschfeldia incana*), radish (*Raphanus sativus*), and western ragweed (*Ambrosia psilostachya*).

A non-vegetated channel is present within the active floodplain of the drainage channel (see Figure 5). Sparse vegetation and a non-native riparian canopy occur throughout this land cover type. Exposed rock and sediment are present within the drainage channel. No water was flowing at the time of the survey and the channel appears to support either an ephemeral or intermittent flow regime.

Disturbed habitat consists of undeveloped land within vacant lots and contains low growing and herbaceous vegetation (see Figure 5). Non-native plant species dominate this land cover type including non-native grasses, red-stem filaree (*Erodium cicutarium*), and cheeseweed (*Malva parviflora*). Tire tracks were observed resulting in compacted and/or disturbed ground cover.

Urban/developed land accounts for the majority of the project site and surrounding area (see Figure 5). This land cover type occurs as various roadways, parking lots, residential and commercial development. Vegetation within urban/developed land consists of ornamental landscaping and a variety of non-native species (see Figure 5).

Wildlife usage was primarily limited to the vegetation communities adjacent to the project site and consisted of species commonly found in urban areas. A total of eight wildlife species were detected during the survey: white crowned sparrow (*Zonotrichia leucophrys*), house finch (*Haemorhous mexicanus*), black phoebe (*Sayornis nigricans*), Anna's hummingbird (*Calypte anna*), American crow (*Corvus brachyrhynchos*), rock dove (*Columbia livia*), northern raccoon (*Procyon lotor*), and domestic cat (*Felis catus*).

4.2 Sensitive Plant Species

No sensitive plants were observed within or adjacent to the project site during the biological survey, and no sensitive plant species are anticipated to occur due to the highly disturbed and developed nature of the project site (Figure 6).

Furthermore, no sensitive plant species are known to occur within a three-mile radius of the project site based on a database review (CDFW 2023a).

4.3 Sensitive Wildlife Species

No sensitive wildlife were detected within or adjacent to the project site during the biological survey. The mule fat scrub and non-native riparian vegetation communities are limited in extent and completely surrounded by dense urban development. They do not contain suitable habitat structures to support sensitive riparian bird species, such as least Bell's vireo (*Vireo bellii puspllus*). Sensitive wildlife species known to occur within two miles of the project site, based on a database review, are presented in Attachment 2.

Migratory and Nesting Birds. The project site and surrounding area have potential to support migratory and nesting bird species. Urban-adapted species have been known to nest within ornamental vegetation and the eves of houses or openings in structures. In addition, several ground nesting species have the potential to nest within the open areas found within the disturbed habitat and urban/developed land within and adjacent to the project site.

4.4 Aquatic Resources

Vegetated portions of this drainage channel likely meet the hydrophytic vegetation, hydric soils, and wetland hydrology parameters to be considered wetland waters of the U.S. under the jurisdiction of the U.S. Army Corps of Engineers (USACE) and the Regional Water Quality Control Board (RWQCB; Figure 7). Similarly, these areas would likely be considered Riparian under the jurisdiction of CDFW, along with areas of non-native riparian and mule fat scrub that may not meet the three USACE wetland parameters. The non-vegetated portions of the drainage channel would likely be considered non-wetland waters of the U.S. under the jurisdiction of the USACE and RWQCB (see Figure 7), delineated at the lateral extent of the Ordinary High Water Mark (OHWM). The non-vegetated channel would also likely be considered streambed under the jurisdiction of the CDFW (see Figure 7). Moreover, the drainage channel may qualify for the MSHCP definition of a riparian/riverine resource because of its ability to carry freshwater flows drained from the surrounding urban areas at least a portion of the year.

4.5 Wildlife Movement Corridors and Nursery Sites

The project site consists of a developed roadway and a vacant infill lot surrounded by dense commercial and residential development (see Figure 3). Though the vacant lot contains disturbed habitat with a small riparian area that likely provides habitat for urban-adapted species and local wildlife movement, these habitats are completely surrounded by dense urban development and lack of connectivity to off-site riparian corridors or other areas of open space. Thus, it is not anticipated that the habitats within the vacant lot would provide habitat for regionally significant wildlife movements. Also, the project site is unlikely to support wildlife nursery sites or large roosting or breeding colonies due to the disturbed and developed nature of the project site.

5.0 Project Impacts, Avoidance, Minimization, and Mitigation

The project would result in a total of 0.43 acre of direct impacts to urban/developed land and 1.17 acres of impacts to disturbed habitat (see Figure 6). Impacts to urban/developed land and disturbed habitat are not considered significant as these land cover types are not considered sensitive. Thus, no mitigation is required for impacts to sensitive vegetation communities as a result of the project. The project would not impact sensitive plant species, wildlife movement corridors, or nursery sites; therefore, no mitigation would be required. Potential direct and/or indirect impacts to sensitive wildlife species and potentially jurisdictional aquatic resources would be addressed through the following avoidance, minimization, and mitigation measures below.

5.1 Sensitive Wildlife

Migratory and Nesting Birds. Direct impacts to migratory and nesting birds may result from the removal of vegetation should construction occur during the general avian and raptor breeding season (January 1 to August 31).). These species are protected by the Migratory Bird Treaty Act and California Fish and Game Code Section 3503.5 and 3503.5 impacts to nesting individuals would need to be avoided. Measures to avoid impacts are described below.

AMM-BIO-1: Migratory and Nesting Birds

Construction should be conducted outside of the avian and raptor breeding season, which is generally defined as January 1 to August 31. If construction must take place during the nesting season, a qualified biologist shall perform a preconstruction survey for nesting birds within the project site, including a 500-foot buffer. The nesting bird survey shall occur no more than seven days prior to the start of construction. If active bird nests are confirmed to be present during the preconstruction survey, a buffer zone will be established by a qualified biologist until a qualified biologist has verified that the young have fledged or the nest has otherwise become inactive.

5.2 Aquatic Resources

The project would avoid direct impacts to potentially jurisdictional wetland and non-wetland waters by using jack-and-bore pit to avoid the riparian area (see Figure 7). However, the project has potential to result in indirect impacts to potential jurisdictional resources occurring adjacent to the project site. Measures to avoid indirect impacts to potential jurisdictional resources are described below.

AMM-BIO: Aquatic Resources

To avoid indirect impacts to potentially jurisdictional features, best management practices, such as the use of silt fences, fiber rolls, and/or gravel bags, should be implemented. No equipment maintenance or fueling should be performed within or near the non-vegetated channel where petroleum products or other pollutants from the equipment may enter this area.

If you have any questions or concerns about this project, please contact Cailin Lyons at (619) 308-9333 extension 108 or clyons@reconenvironmental.com.

Sincerely,

Danelle Gadia
Assistant Biologist

DBG:jg

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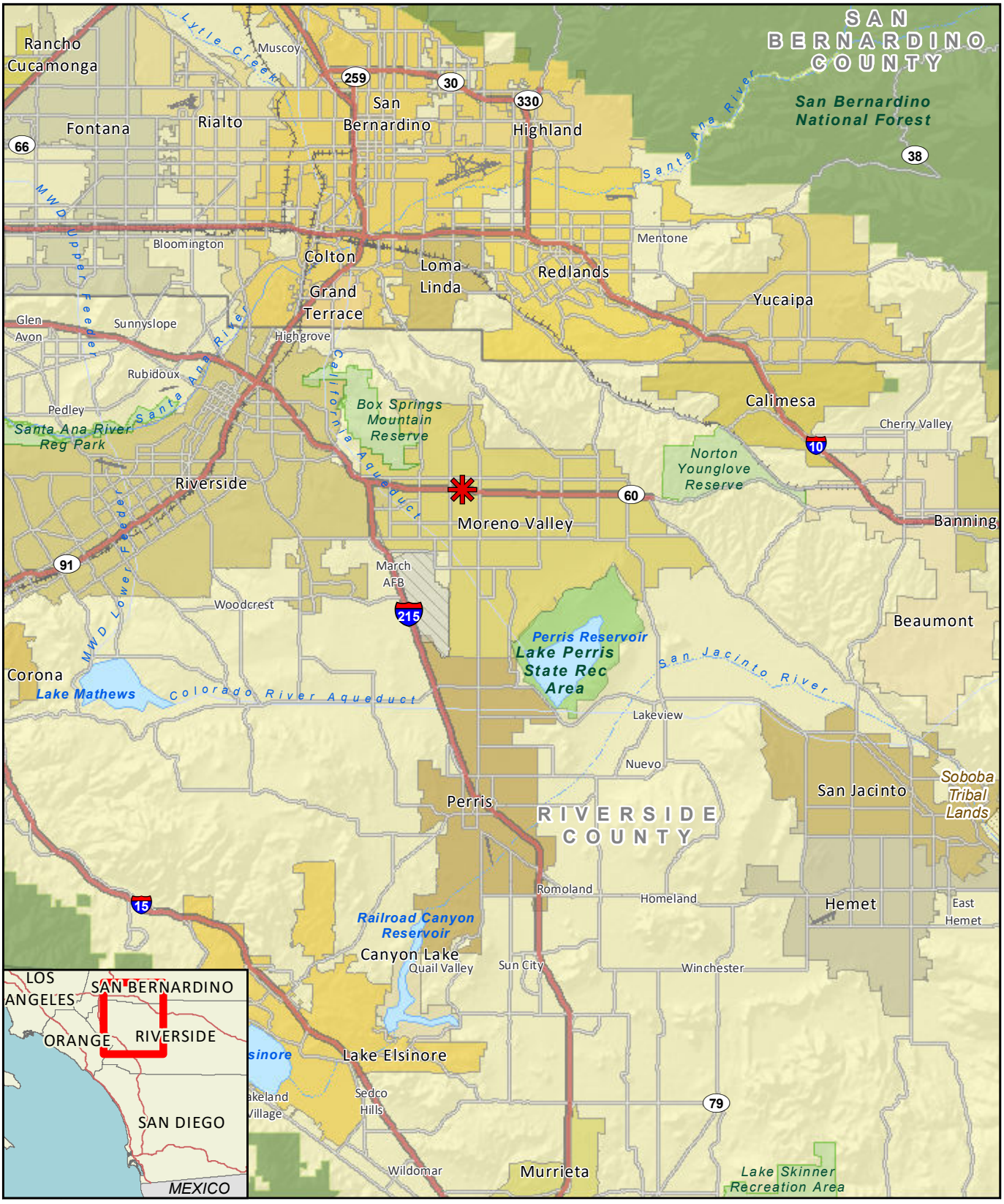

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FIGURE 1
Regional Location

Map Source: USGS 7.5 minute topographic map series, Sunnymead quadrangle, 1980, T03S R03W

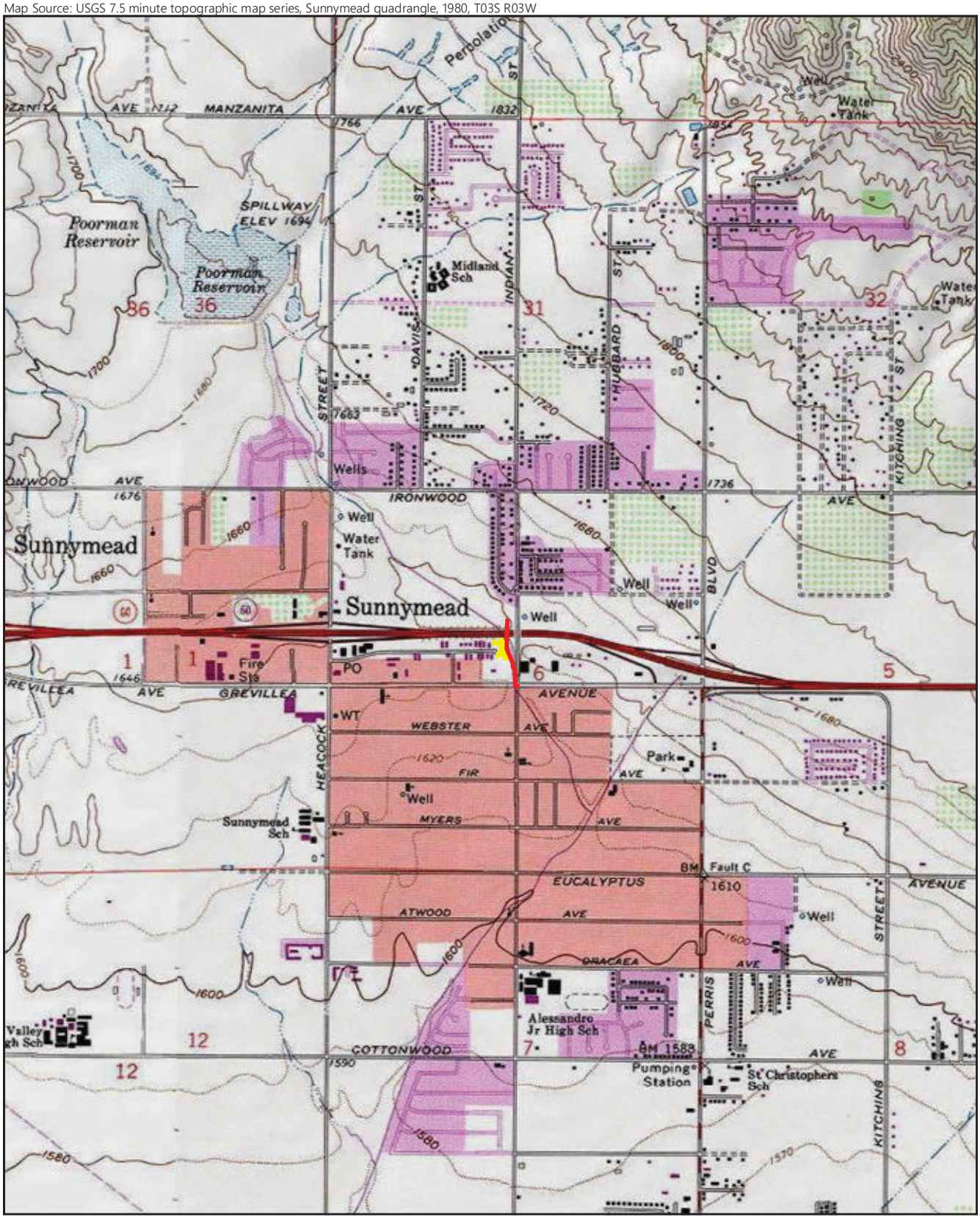

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FIGURE 2
Project Location on USGS Map

Image Source: NearMap (flown September 2023)

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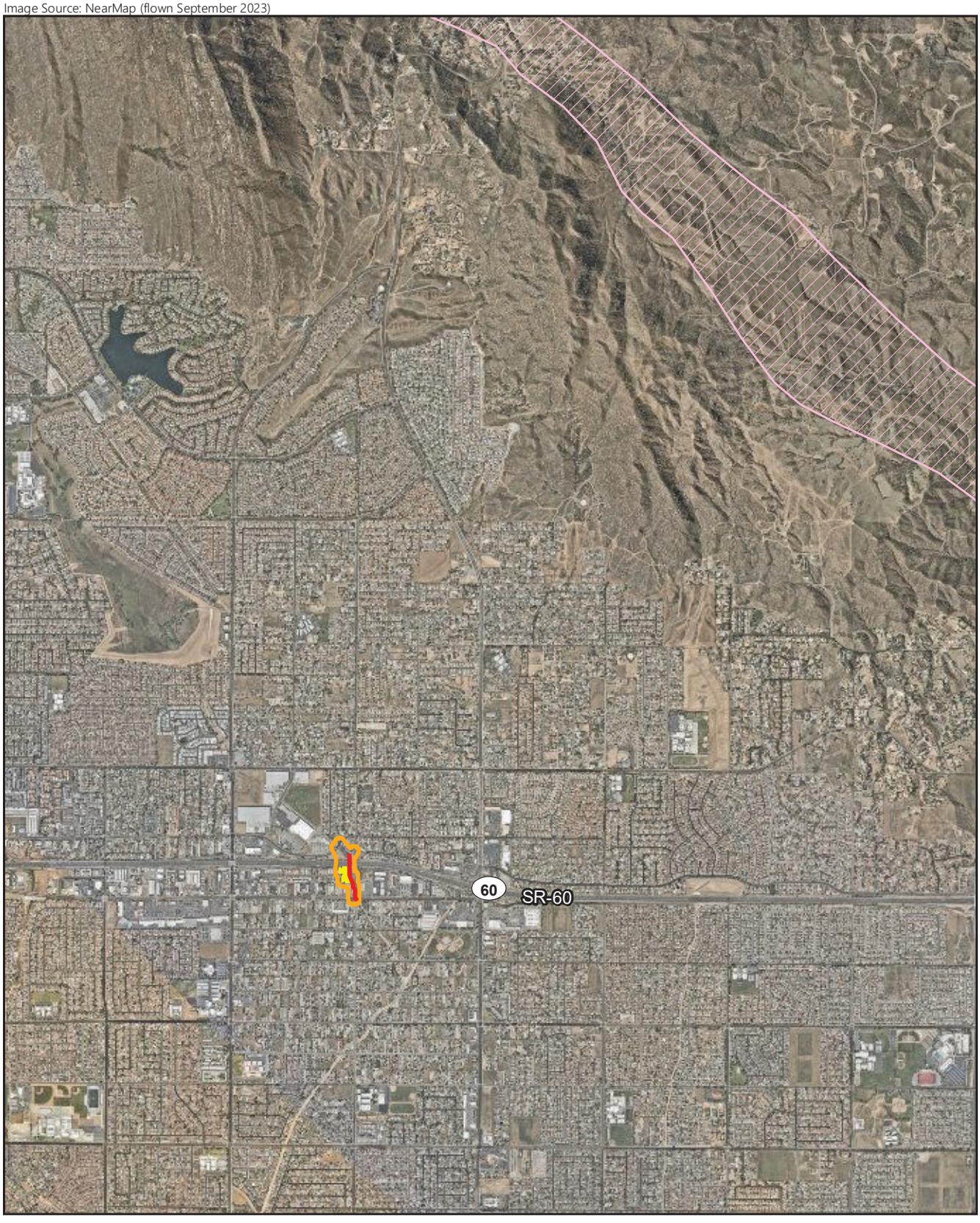
FIGURE 3
Project Location on Aerial Photograph

Image Source: NearMap (flown September 2023)



Project Alignment
Staging Area
Survey Area
MSHCP Criteria Cell Area

0 Feet 3,000

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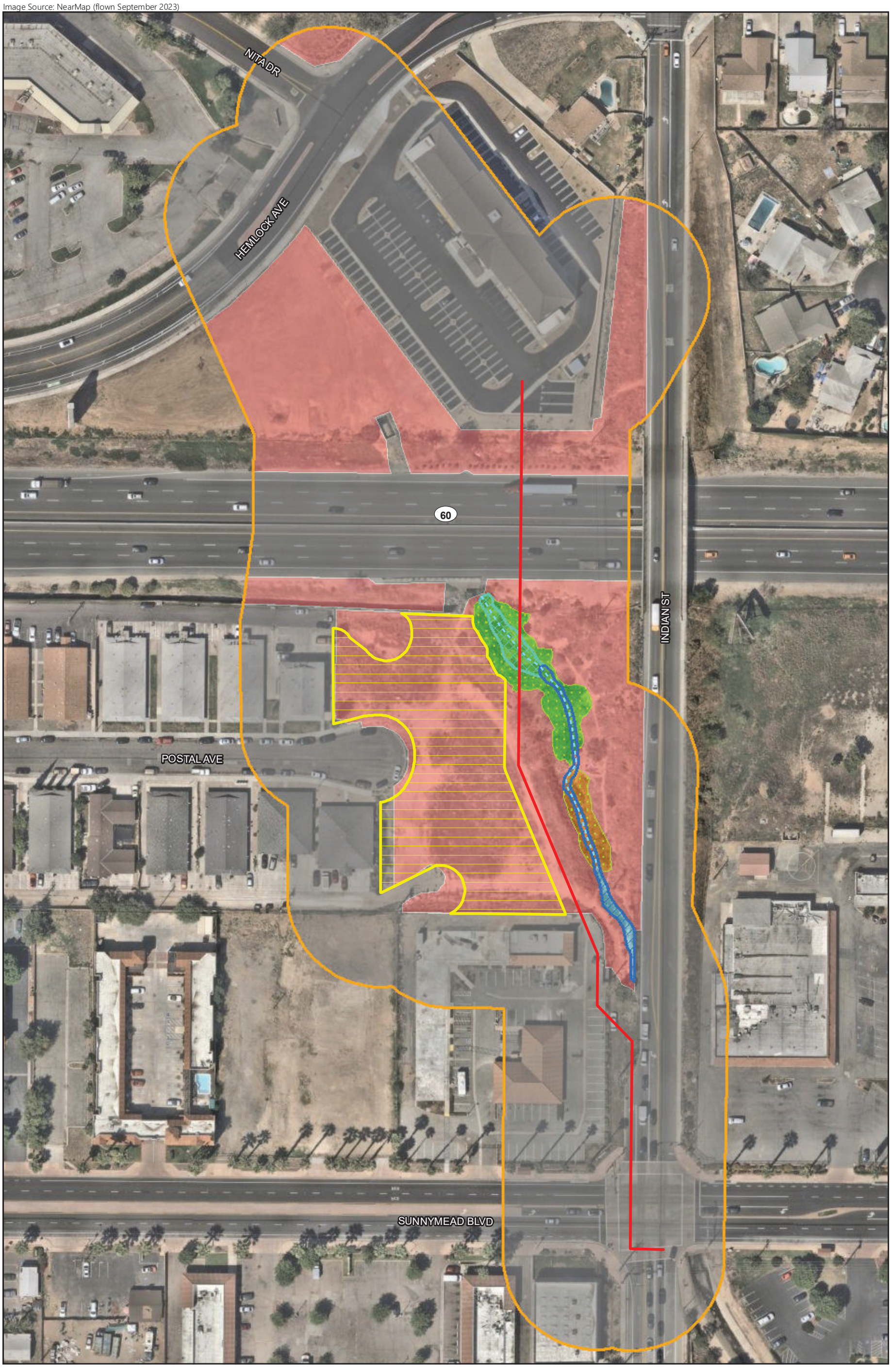
FIGURE 4
Project in Relation to MSHCP Area

Image Source: NearMap (flown September 2023)



Project Alignment
Staging Area
Survey Area

Potential Jurisdictional Resources
USACE/RWQCB Non-wetland Waters of the US, CDFW Streambed
USACE/RWQCB Wetland Waters of the US, CDFW Riparian
CDFW Riparian

Vegetation Community
Mule Fat Scrub
Non-native Riparian
Non-vegetated Channel
Disturbed Habitat
Urban/Developed

0 Feet 100

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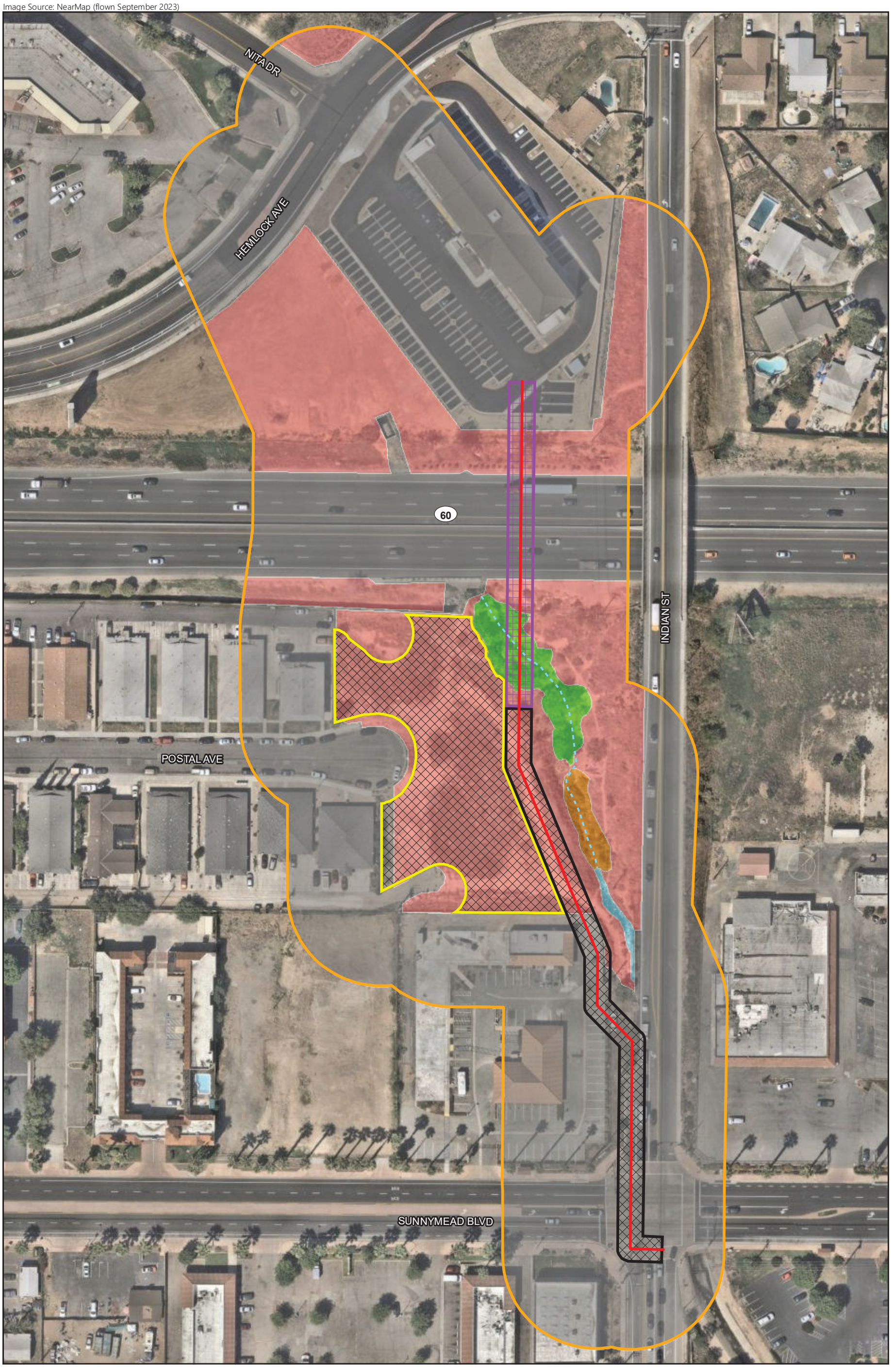
FIGURE 5
Existing Biological Resources

Image Source: NearMap (flown September 2023)



Project Alignment
Jack and Bore Area
Impact Area
Staging Area
Survey Area

Vegetation Community
Mule Fat Scrub
Non-native Riparian
Non-vegetated Channel
Disturbed Habitat
Urban/Developed

0 Feet 100

RECON

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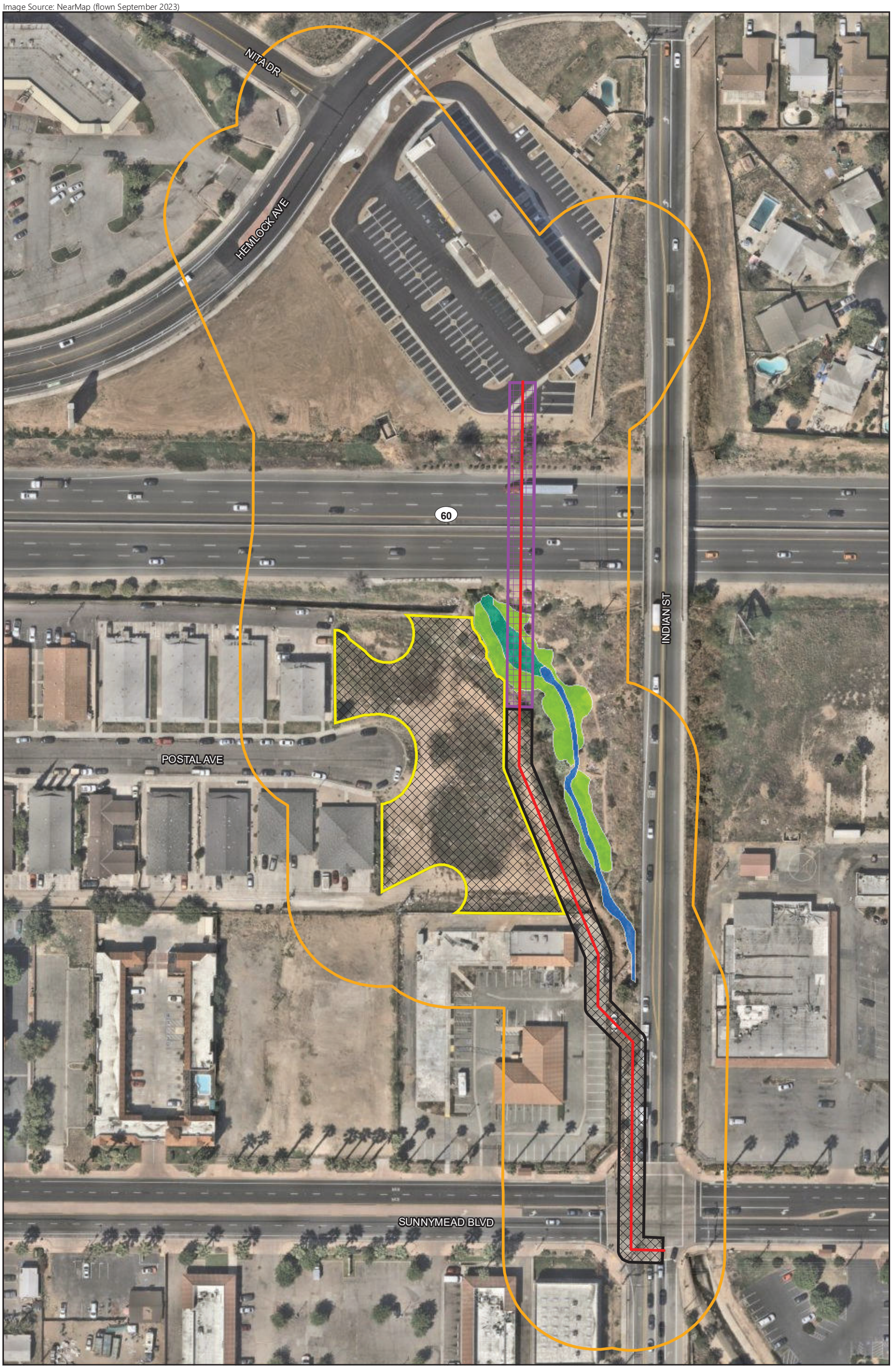
FIGURE 6
Project Impacts

Image Source: NearMap (flown September 2023)



Project Alignment
Jack and Bore Area
Impact Area
Staging Area
Survey Area

Potential Jurisdictional Resources

USACE/RWQCB Non-wetland Waters of the US, CDFW Streambed

USACE/RWQCB Wetland Waters of the US, CDFW Riparian

CDFW Riparian

0 Feet 100

RECON

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FIGURE 7

Project Impacts to Potential Jurisdictional Resources

ATTACHMENTS

ATTACHMENT 1

Plant Species Observed

Attachment 1 Plant Species Observed				
Major Plant Group	Family	Scientific Name / Common Name	Occupied Habitat	Origin
Angiosperms: Monocots	Arecaceae / Palm Family	*Syagrus romanzoffiana* / queen palm	Dev	I
		Washingtonia robusta / Mexican fan palm	NNR	I
	Poaceae (Gramineae) / Grass Family	*Avena barbata* / slender wild oat	Dist, NNR	I
		Bromus diandrus / ripgut grass	Dist	I
		Cynodon dactylon / Bermuda grass	NNR	I
		Hordeum murinum / wall barley	Dist	I
Angiosperms: Eudicots	Amaranthaceae / Amaranth Family	*Amaranthus albus* / tumbleweed	Dev	I
	Anacardiaceae / Sumac or Cashew Family	*Schinus terebinthifolius* / Brazilian pepper tree	Dev	I
	Asteraceae / Sunflower Family	*Ambrosia psilostachya* / western ragweed	MFS, NNR	N
		Baccharis salicifolia ssp. *salicifolia* / mule fat, seep-willow	MFS	N
		Ericameria palmeri var. *palmeri* / Palmer's goldenbush	Dist	N
		Helianthus annuus / western sunflower	Dist, NNR	N
		Sonchus asper ssp. *asper* / prickly sow thistle	Dev	I
		Sonchus oleraceus / common sow thistle	Dev	I
		Stephanomeria sp. / wreath-plant	Dist	N
		Taraxacum officinale / common dandelion	Dev	I
	Boraginaceae / Borage Family	*Amsinckia menziesii* / common fiddleneck, small-flowered fiddleneck, rancher's fireweed	Dist	N
	Boraginaceae / Borage Family	*Amsinckia* sp. / fiddleneck	Dist	N
	Brassicaceae (Cruciferae) / Mustard Family	*Hirschfeldia incana* / short-pod mustard	Dist, NNR	I
		Raphanus sativus / radish	NNR	I
		Sisymbrium irio / London rocket	Dev	I
	Chenopodiaceae / Goosefoot Family	*Atriplex canescens* / four-wing saltbush, shad-scale	Dist	N
		Salsola tragus / Russian thistle, tumbleweed	Dist	I
	Convolvulaceae / Morning-Glory Family	*Convolvulus arvensis* / bindweed, orchard morning-glory	Dist	I
	Euphorbiaceae / Spurge Family	*Croton setiger* [=*Eremocarpus setiger*] / turkey-mullein, dove weed	Dist	N
	Fabaceae (Leguminosae) / Legume Family	*Medicago polymorpha* / California burclover	Dev	I
		Parkinsonia aculeata / Mexican palo verde	NNR	I
		Vicia villosa ssp. *varia* / hairy vetch	NNR	I
	Geraniaceae / Geranium Family	*Erodium botrys* / long-beak filaree	Dev	I
		Erodium cicutarium / redstem filaree	Dist	I
	Malvaceae / Mallow Family	*Malva parviflora* / cheeseweed, little mallow	Dist	I
	Myrtaceae / Myrtle Family	*Eucalyptus* sp. / gum tree	Dev	I
	Oleaceae / Olive Family	*Fraxinus uhdei* / shamel ash	NNR	I

Attachment 1 Plant Species Observed				
Major Plant Group	Family	Scientific Name / Common Name	Occupied Habitat	Origin
Angiosperms: Eudicots	Plantaginaceae / Plantain Family	*Plantago major* / common plantain	NNR	I
	Polygonaceae / Buckwheat Family	*Polygonum* sp. / knotweed, smartweed	Dist	N/I
	Salicaceae / Willow Family	*Salix gooddingii* / Goodding's black willow	MFS	N
	Solanaceae / Nightshade Family	*Datura wrightii* / western Jimson weed	Dist	N
	Ulmaceae / Elm Family	*Ulmus parvifolia* / Chinese elm, lacebark elm	NNR	I

NOTE: Scientific and common names were primarily derived from Jepson eFlora (Jepson Flora Project 2020). In instances where common names were not provided in this resource, common names were obtained from Rebman and Simpson (2014). Additional common names were obtained from the USDA maintained database (USDA 2023) or the *Sunset Western Garden Book* (Brenzel 2001), the), the Plant Finder (for ornamental/horticultural plants. Federal and state listing status is based on California Department of Fish and Wildlife, Natural Diversity Database (CDFW) 2023a.

HABITAT
DEV= Developed
DIST = Disturbed
MFS = Mule fat scrub
NNR = Non-native riparian

ORIGIN
N =Native to locality.
I = Introduced species from outside locality.

ATTACHMENT 2

Sensitive Wildlife Species with the Potential to Occur

Attachment 2 Sensitive Wildlife Species Observed or with the Potential to Occur								
Major Wildlife Group	Family	Scientific Name / Common Name	Federal Status	State Status	Western Riverside	Habitat Preference / Requirements	Potential to Occur On-Site (Observed or L/M/H/U)	Basis for Determination of Occurrence Potential
Invertebrates	Apidae / Honey Bees, Bumble Bees, and Allies	*Bombus crotchii* / Crotch's bumble bee		SCE		Coastal areas, open grasslands, shrub habitats.	L	This species was not observed during the biological survey; however, it has a low potential to occur on the project site due to surrounding dense urban development and a lack of proximity to areas of open space containing suitable habitats. Additionally, the project site is heavily dominated by non-native grasses and forbs with limited potential nectar sources. This species has been reported within two miles of the project site (CDFW 2023b).
Amphibians	Pelobatidae / Spadefoot Toads	*Spea hammondii* / western spadefoot		SSC	MSHCP	Vernal pools, floodplains, and alkali flats within areas of open vegetation.	U	This species was not observed during the biological survey and is not expected to occur on the project site due to the lack of suitable vernal pool, floodplain, or alkali flat habitat. This species is known to occur within 2 miles of the project site (CDFW 2023b).
Reptiles	Crotalidae / Rattlesnakes	*Crotalus ruber* / red diamond rattlesnake		SSC	MSHCP	Desert scrub and riparian, coastal sage scrub, open chaparral, grassland, and agricultural fields.	L	This species was not observed during the biological survey and has a low potential to occur within the project site due to dense urban development that lacks proximity to undeveloped land with habitat to support this species. Although the project site supports potentially suitable disturbed land and riparian habitat, this species is not expected to nest on the project site. This species is known to occur within 2 miles of the project site (CDFW 2023b).

Attachment 2 Sensitive Wildlife Species Observed or with the Potential to Occur								
Major Wildlife Group	Family	Scientific Name / Common Name	Federal Status	State Status	Western Riverside	Habitat Preference / Requirements	Potential to Occur On-Site (Observed or L/M/H/U)	Basis for Determination of Occurrence Potential
Birds	Accipitridae / Hawks, Kites, & Eagles	*Accipiter cooperii* / Cooper's hawk		WL	MSHCP	Mature forest, open woodlands, wood edges, river groves. Parks and residential areas.	U	This species was not observed during the biological survey and has a low potential to occur in the non-native riparian and mule fat scrub adjacent to the project site, outside of the project impact areas. These off-site habitats are small, isolated patches that are limited in extent and completely bounded by urban/developed land and State Route 60 (SR-60) and lacks connectivity to suitable riparian habitat. This species is known to occur within 2 miles of the project site (CDFW 2023b).
	Cuculidae / Cuckoos & Roadrunners	*Coccyzus americanus occidentalis* / western yellow-billed cuckoo	FT	SE	MSHCP, 6.1.2	Riparian woodlands. Summer resident. Very localized breeding.	U	This species was not observed during the biological survey and is not expected to occur within the project site. This species requires extensive stands of mature riparian woodland. The non-native riparian and mule fat scrub on-site are limited to small, isolated patches that are completely bounded by urban/developed land and SR-60 and lacks connectivity to suitable riparian habitat. One extant record exists for this species occurs approximately one mile north of the survey area, though is separated from the project vicinity by SR-60 and high-density urban development (USFWS 2023a).

Attachment 2 Sensitive Wildlife Species Observed or with the Potential to Occur								
Major Wildlife Group	Family	Scientific Name / Common Name	Federal Status	State Status	Western Riverside	Habitat Preference / Requirements	Potential to Occur On-Site (Observed or L/M/H/U)	Basis for Determination of Occurrence Potential
Birds	Vireonidae / Vireos	*Vireo bellii pusillus* / least Bell's vireo	FE	SE	MSHCP, 6.1.2	Willow riparian woodlands. Summer resident.	U	This species was not observed during the biological survey and is not expected to occur within the project site and has a low potential to occur in the non-native riparian and mule fat scrub adjacent to the project site, outside of project impact areas. These off-site habitats are limited to small, isolated patches that are completely bounded by urban/developed land and SR-60 and lacks connectivity to suitable riparian habitat. Two extant records exist for this species occur approximately one mile north of the survey area, though are separated from the project vicinity by SR-60 and high-density urban development (CDFW 2023b; USFWS 2023a).
	Polioptilidae / Gnatcatchers	*Polioptila californica californica* / coastal California gnatcatcher	FT	SSC	MSHCP	Coastal sage scrub, maritime succulent scrub. Resident.	U	This species was not observed during the biological survey and it is not expected to occur within the project site due to the lack of suitable coastal sage scrub habitat. This species is known to occur within 2 miles of the project site (CDFW 2023b; USFWS 2023a).
	Passerellidae / New World Passerines	*Aimophila ruficeps canescens* / southern California rufous-crowned sparrow		WL	MSHCP	Coastal sage scrub, chaparral, grassland. Resident.	U	This species was not observed during the biological survey and it is not expected to occur within the project site due to the lack of suitable coastal sage scrub habitat. This species is known to occur within 2 miles of the project site (CDFW 2023b).

Attachment 2 Sensitive Wildlife Species Observed or with the Potential to Occur								
Major Wildlife Group	Family	Scientific Name / Common Name	Federal Status	State Status	Western Riverside	Habitat Preference / Requirements	Potential to Occur On-Site (Observed or L/M/H/U)	Basis for Determination of Occurrence Potential
Birds	Passerellidae / New World Passerines	*Artemisiospiza* [=*Amphispiza*] *belli belli* / Bell's sage sparrow		WL	MSHCP	Chaparral, coastal sage scrub. Localized resident.	U	This species was not observed during the biological survey and it is not expected to occur within the project site due to the lack of suitable coastal sage scrub habitat. This species is known to occur within 2 miles of the project site (CDFW 2023b).
	Icteridae / Blackbirds & New World Orioles	*Icteria virens* / yellow-breasted chat		SSC	MSHCP	Dense riparian woodland. Localized summer resident.	L	This species was not observed during the biological survey and has a low potential to occur on the project site and within the non-native riparian and mule fat scrub adjacent to the project site, located outside of project impact areas. These off-site habitats are small, isolated patches that are completely bounded by urban/developed land and SR-60 and lacks connectivity to suitable riparian habitat. This species is known to occur within 2 miles of the project site (CDFW 2023b).
	Fringillidae / Finches	*Spinus* [=*Carduelis*] *lawrencei* / Lawrence's goldfinch				Oak-pine woods, chaparral. Breeds in a variety of habitats including streamside trees, oak woodland, open pine woods, pinyon-juniper woods, chaparral.	U	This species was not observed during the biological survey and it is not expected to occur within the project site due to the lack of suitable coastal sage scrub habitat and dense woodland habitat. This species is known to occur within 2 miles of the project site (CDFW 2023b).

Attachment 2 Sensitive Wildlife Species Observed or with the Potential to Occur								
Major Wildlife Group	Family	Scientific Name / Common Name	Federal Status	State Status	Western Riverside	Habitat Preference / Requirements	Potential to Occur On-Site (Observed or L/M/H/U)	Basis for Determination of Occurrence Potential
Mammals	Vespertilionidae / Vesper Bats	*Lasiurus xanthinus*/ western yellow bat		SSC		Active year-round. Roosts in the foliage of trees in arid habitats, particularly in native and exotic palm trees. Forage for a variety of flying insects over streams and ponds. Ranges from southern California and Arizona into western Mexico.	L	This species was not observed during the biological survey and has a low potential to occur on the project site and within the non-native riparian and mule fat scrub adjacent to the project site, located outside of project impact areas. These off-site habitats are limited in extent, lack perennial water, and are surrounded by dense urban/developed land and SR-60 that lacks proximity to suitable woodlands with perennial water. This species is known to occur within 2 miles of the project site (CDFW 2023b).
	Heteromyidae / Pocket Mice & Kangaroo Rats	*Chaetodipus fallax fallax* / northwestern San Diego pocket mouse		SSC	MSHCP	San Diego County west of mountains in sparse, disturbed coastal sage scrub or grasslands with sandy soils.	U	This species was not observed during the biological survey and it is not expected to occur within the project site due to the lack of suitable coastal sage scrub and grassland habitat. This species is known to occur within 2 miles of the project site (CDFW 2023b).
	Heteromyidae / Pocket Mice & Kangaroo Rats	*Dipodomys merriami parvus* / San Bernardino Merriam's kangaroo rat, San Bernardino kangaroo rat	FE	SCE, SSC	MSHCP, 6.3.2	Open scrub vegetation (coastal sage scrub, chaparral, & desert) in sandy loam substrates of alluvial fans and floodplains.	U	This species was not observed during the biological survey and is not expected to occur within the project site due to the lack of suitable open scrub and alluvial habitat with sandy soil. This species is known to occur within 2 miles of the project site (USFWS 2023).

Attachment 2 Sensitive Wildlife Species Observed or with the Potential to Occur								
Major Wildlife Group	Family	Scientific Name / Common Name	Federal Status	State Status	Western Riverside	Habitat Preference / Requirements	Potential to Occur On-Site (Observed or L/M/H/U)	Basis for Determination of Occurrence Potential
Mammals	Heteromyidae / Pocket Mice & Kangaroo Rats	*Dipodomys stephensi* / Stephens' kangaroo rat	FT	ST	MSHCP, SKRHCP	Grassland, open areas.	U	This species was not observed during the biological survey, and is not expected to occur within the project site due to the lack of suitable open areas among grassland habitat. In addition, the project site is surrounded by dense urban development and lacks proximity to suitable habitat for this species. This species is known to occur within 2 miles of the project site (CDFW 2023b).
	Heteromyidae / Pocket Mice & Kangaroo Rats	*Perognathus longimembris brevinasus* / Los Angeles pocket mouse		SSC	MSHCP, 6.3.2	Desert riparian, scrub, wash. Coastal scrub and sagebrush. Localized.	U	This species was not observed during the biological survey and is not expected to occur on the project site. This species is restricted to alluvial habitats such as washes and alluvial scrub with sandy soils. The riparian and mule fat scrub on-site are densely vegetated and lack suitable alluvial soils to support this species. In addition, the project site is bounded by dense urban development and lacks proximity to suitable habitat for this species. This species is known to occur within 2 miles of the project site (CDFW 2023b).
NOTE: Zoological nomenclature for invertebrates is in accordance with the Evans 2008; for reptiles and amphibians with Crother et. al (2017); for birds with Chesser et al. 2022; for mammals with Bradley et al. (2014), American Society of Mammalogists 2021. Determination of the potential occurrence for listed, sensitive, or noteworthy species is based upon known ranges and habitat preferences for species follows Evans 2008, Jennings and Hayes 1994, Western Bat Working Group 2017, and Harvey et. al 2011. Federal and state listing status is based on California Department of Fish and Wildlife, Natural Diversity Database (CDFW) 2023a and the U.S. Fish and Wildlife Service (USFWS) All Species Occurrences GIS Database (2023a).								

Attachment 2 Sensitive Wildlife Species Observed or with the Potential to Occur
STATUS CODES Federal Status FE = Listed as endangered by the federal government FT = Listed as threatened by the federal government State Status SE = Listed as endangered by the state of California ST = Listed as threatened by the state of California SCE = State candidate for listing as Endangered SSC = California Department of Fish and Wildlife species of special concern WL = California Department of Fish and Wildlife watch list species Western Riverside MSHCP = Western Riverside County Multiple Species Habitat Conservation Prlan covered species 6.3.2 = Species subject to survey requirements and avoidance measures in Section 6.3.2, Additional Survey Needs and Procedures of the MSHCP SKR HCP = Stephens' Kangaroo Rate Habitat Conservation Program covered species **POTENTIAL TO OCCUR ON-SITE** L = Low M = Medium H = High U = Unexpected

APPENDIX C

Archaeological Survey Report

RECON

An Employee-Owned Company

October 27, 2023

Mr. Joseph Broadhead
Principal Water Resource Specialist
Eastern Municipal Water District
2270 Trumble Road
Perris, CA 92572-8300

Reference: Archaeological Resources Survey Report for the Indian Street Sewer Replacement Project (RECON Number 9878-6)

Dear Mr. Broadhead:

This letter details the results of an archaeological resources survey conducted for the Indian Street Sewer Replacement Project (project). RECON Environmental, Inc. (RECON) conducted background research, reviewed historic topographic maps and aerial photographs, and completed a pedestrian survey of the project area. This letter report has been prepared to provide necessary information to identify adverse impacts to potentially significant cultural resources by implementation of the project.

PROJECT LOCATION AND DESCRIPTION

The project is located in the city of Moreno Valley, California (Figure 1). The project area is located within Township 3 South, Range 3 West of the U.S. Geological Survey 7.5-minute Sunnymead quadrangle (Figure 2). The project includes a sewer alignment that parallels Indian Street and intersects State Route 60 (SR-60). Regional access to the project area is provided via Hemlock Avenue north of SR-60 and Postal Avenue south of SR-60. The area of potential effect (APE) is considered the proposed alignment as shown on Figure 3.

The project involves installation of a pipeline within existing paved and unpaved roadways. The proposed 15-inch pipeline alignment begins north of SR-60 within a parcel recently developed for a hotel (Assessor Parcel Number 481-090-037). Activity on this parcel would include connection to an existing 12-inch pipeline constructed on the hotel parcel. A jack-n-bore pit would be constructed on the south border of this parcel near the SR-60 right-of-way to facilitate movement of the pipeline under SR-60 using trenchless technology. Once under SR-60, the pipeline would enter an Eastern Municipal Water District (District) owned parcel (Assessor Parcel Number 481-101-016) south of the freeway. The trenchless work would continue under an existing drainage channel on this parcel then continue southeast/south within an open-cut trench to Sunnymead Boulevard where it connects to existing infrastructure.

METHODS

In order to determine if this project will adversely impact significant cultural resources, background research, a review of topographic maps and historic aerial photographs, and an on-foot survey was completed by RECON archaeologist Nathanial Yerka. The pedestrian survey was performed on September 13, 2023. Prior to the survey, a records search of APE was performed at the Eastern Information Center (EIC), located on the University of California, Riverside campus to identify any previously recorded cultural resources located within a one-mile radius of the project area. In addition, a letter was sent on August 10, 2023, to the Native American Heritage Commission (NAHC) requesting a search of their Sacred Lands File to identify spiritually significant and/or sacred sites or traditional use areas in the

project vicinity (Attachment 1). The NAHC was also asked to provide a list of local Native American tribes, bands, or individuals that may have concerns or interests regarding cultural resources potentially occurring within the APE.

The primary goal of this survey was to determine (1) if there are previously unrecorded cultural resources present, and if so, document the resources' locations and what they consist of and (2) to update conditions of previously recorded cultural resources. The project area was inspected for evidence of archaeological materials such as flaked and ground stone tools or fragments, ceramics, milling features, and human remains. The survey concentrated on an approximately 15-meter-wide survey area that contained the proposed alignment, concentrating mostly on the non-built portions of the APE.

Carmen Zepeda-Herman, M.A., RPA, served as principal investigator. Mrs. Zepeda-Herman meets the Secretary of the Interior Standards for Archaeology and Historic Preservation. Mrs. Zepeda-Herman earned a Master of Arts in Anthropology from San Diego State University and is a Registered Professional Archaeologist. She has over 23 years of field experience involving prehistoric resources in southern California and the Southwest region.

RESULTS OF RECORDS SEARCH

The records search results from the EIC indicate that 16 cultural resource investigations have been conducted within one mile of the project APE, one of which includes the project APE. The records search results also indicate that two cultural resources have been recorded within one mile of the project APE (Confidential Attachment 1). The two previously recorded cultural resources are historic-era resources comprising a concrete foundation along with a utility pole and a fragment of glass, and a trash dump (Table 1). No previously recorded cultural resources include the project APE.

Table 1
Cultural Resources Recorded within One Mile of the Project Area

Primary Number	Trinomial	Age	Site Type	Recording Events
P-33-028824	CA-RIV-012934	Historic	Foundation/slab; Other - power pole and glass fragment	2019 (Riordan Goodwin, LSA Associates Inc.)
P-33-029404	CA-RIV-013169	Historic	Trash dump	2020 (Nicholas Hearth, Marcel Young, Duke CRM)

REVIEW OF HISTORIC TOPOGRAPHIC MAPS AND AERIAL PHOTOGRAPHS

A review of historic topographic maps and aerial photographs indicate the entire project APE has been subject to surface disturbance as early as 1959. The 1959 aerial photograph—the first available aerial photograph—exhibits the current alignment of Sunnymead Boulevard and an elevated and graded pad adjacent to the north of Sunnymead Boulevard in the area of the current parking area and building located at the northwest corner of Sunnymead Boulevard and Indian Street. The 1959 photograph also exhibits the channelized drainage within the alignment area of the current Indian Street, continuing upslope and to the north to the area of the current alignment of SR-60 where the drainage originates from the northeast, as well as the graded lot at the northern end of the project APE, north of the current SR-60. The earliest available topographic map from 1954 represents the current alignments of Sunnymead Boulevard and Indian Street and a southeast-trending water course crossing the project APE just north of the intersection of the current alignments of Sunnymead Boulevard and Indian Street. The 1966 photograph exhibits the construction of SR-60 and the current alignment of Postal Avenue. Grading for the construction of the current residential development along Postal Avenue, including the APE portion within the current vacant lots located at the

eastern end of the cul-de-sac, also happened by 1966. Between 1978 and 1984 the current commercial property located on the northwest corner of the Sunnymead Boulevard and Indian Street intersection was developed. No other major changes are noted in subsequent available aerial photographs (Nationwide Environmental Title Research LLC 2023).

Native American Heritage Commission Response

A response was received from the NAHC on September 7, 2023, indicating that their search of the Sacred Lands File was negative (see Attachment 1).

RESULTS OF SURVEY

RECON archaeologist Nathanial Yerka conducted a pedestrian survey of the project APE on September 13, 2023, and did not identify any cultural resources. The southern portion of the APE is the fully developed intersection of Sunnymead Boulevard and Indian Street (Photograph 1). Moving north, the alignment hugs the western side and right-hand turn lane of Indian Street, then turns northwest, crossing a vacant and disturbed portion of the Indian Street right-of-way, and enters a developed commercial lot (Photograph 2). Continuing northwest, the alignment crosses a series of disturbed vacant lots on the west side of a disturbed and channelized drainage (Photograph 3). The alignment turns north and crosses a portion of the disturbed and channelized drainage which exhibits dense non-native vegetation (Photograph 4) until intersecting with the southern manufactured support slope of SR-60 (Photograph 5). This disturbed area exhibits modern poured concrete features and placed rip rap. The alignment continues north and incorporates a portion of the current SR-60. The portion of the APE north of SR-60 exhibits a manufactured east-west drainage with irrigation and ornamental vegetation, a chain-link fence, and the newly developed parking area of a hotel (Photograph 6). The central portion of the APE situated between the southern side of SR-60 and the north side of a current commercial property exhibited a fair amount of modern refuse and surface debris owed to a small number of transients who occupy the drainage.

REGULATORY CONTEXT

California Environmental Quality Act

The regulatory framework and methods for determining impacts on cultural resources include compliance with California Environmental Quality Act (CEQA) requirements as defined in Section 15064.5 of the CEQA Guidelines, Determining the Significance of Impacts to Archaeological and Historical Resources. These guidelines require the identification of cultural resources that could be affected by the project, the evaluation of the significance of such resources, an assessment of the project impacts on significant resources, and a development of a research design and data recovery program to avoid or address adverse effects to significant resources. Significant resources, also called historical resources, are those cultural resources (whether prehistoric or historic) that have been evaluated and determined to be eligible for listing in the California Register of Historical Resources.

According to Section 15064.5(a) of the CEQA Guidelines, a historical resource includes the following:

1. A resource listed in, or determined to be eligible for listing on, the California Register of Historical Resources.
2. A resource included in the local register.

3. A resource which an agency determines to be historically significant. Generally a resource shall be considered to be "historically significant," if the resource meets the criteria for listing on the California Register of Historical Places (Public Resources Code Section 5024.1 Title 14 California Code of Regulations, Section 4852) including the following:
    A. Is associated with events that have made a significant contribution to the broad patterns of California's history or cultural heritage;
    B. Is associated with the lives of persons important in our past;
    C. Embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of an important creative individual, or possesses high artistic values; or
    D. Has yielded, or maybe likely to yield, information important to prehistory or history.
4. The fact that a resource is not listed in or determined to be eligible for listing in the California Register of Historical Resources or a local register does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code Sections 5020.1(j) or 5024.1.

A resource must meet one of the above criteria and must have integrity; that is, it must evoke the resource's period of significance or, in the case of criterion D, it may be disturbed, but it must retain enough intact and undisturbed deposits to make a meaningful data contribution to regional research issues.

MANAGEMENT RECOMMENDATIONS

No significant prehistoric or historic cultural resources were observed during the survey. The EIC records search did not identify any cultural resources within the project APE, therefore, the project would not result in an adverse impact to known cultural resources. Additionally, the NAHC indicated that their search of the Sacred Lands File was negative for the project APE vicinity. Furthermore, because the entire project area has been disturbed by past development the possibility of buried significant cultural resources being present within the project area is considered low, RECON does not recommend any further cultural resources work for this project.

Please call me at (619) 308-9333 extension 192 or Carmen Zepeda-Herman at extension 133 if you have any questions or concerns about this project.

Sincerely,

Nathanial Yerka
Project Archaeologist

NDY:jg

Attachments

REFERENCE CITED

Nationwide Environmental Title Research, LLC (NETR)
2023 Historic Aerials. http://www.historicaerials.com/. Accessed on October 2, 2023.

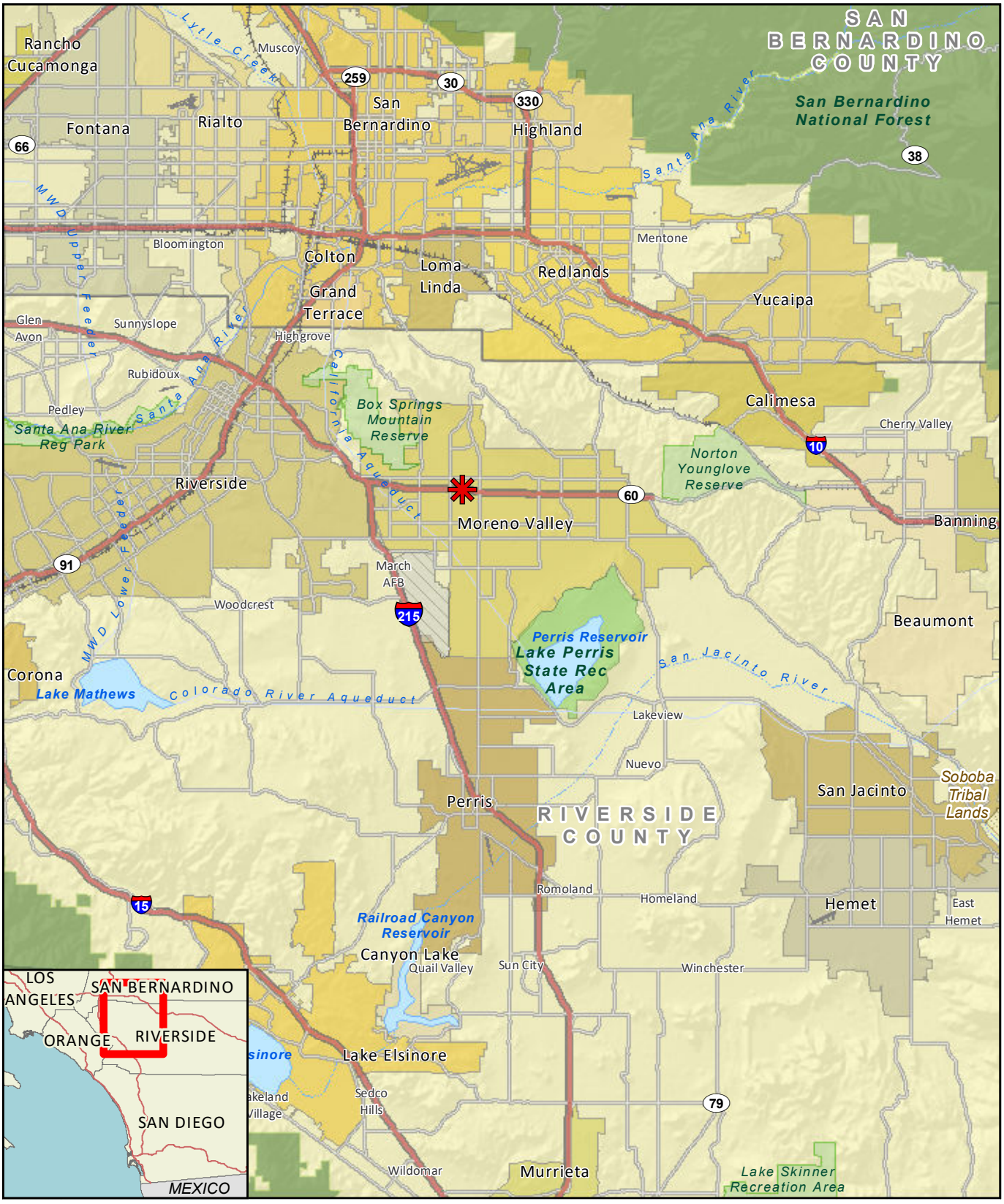

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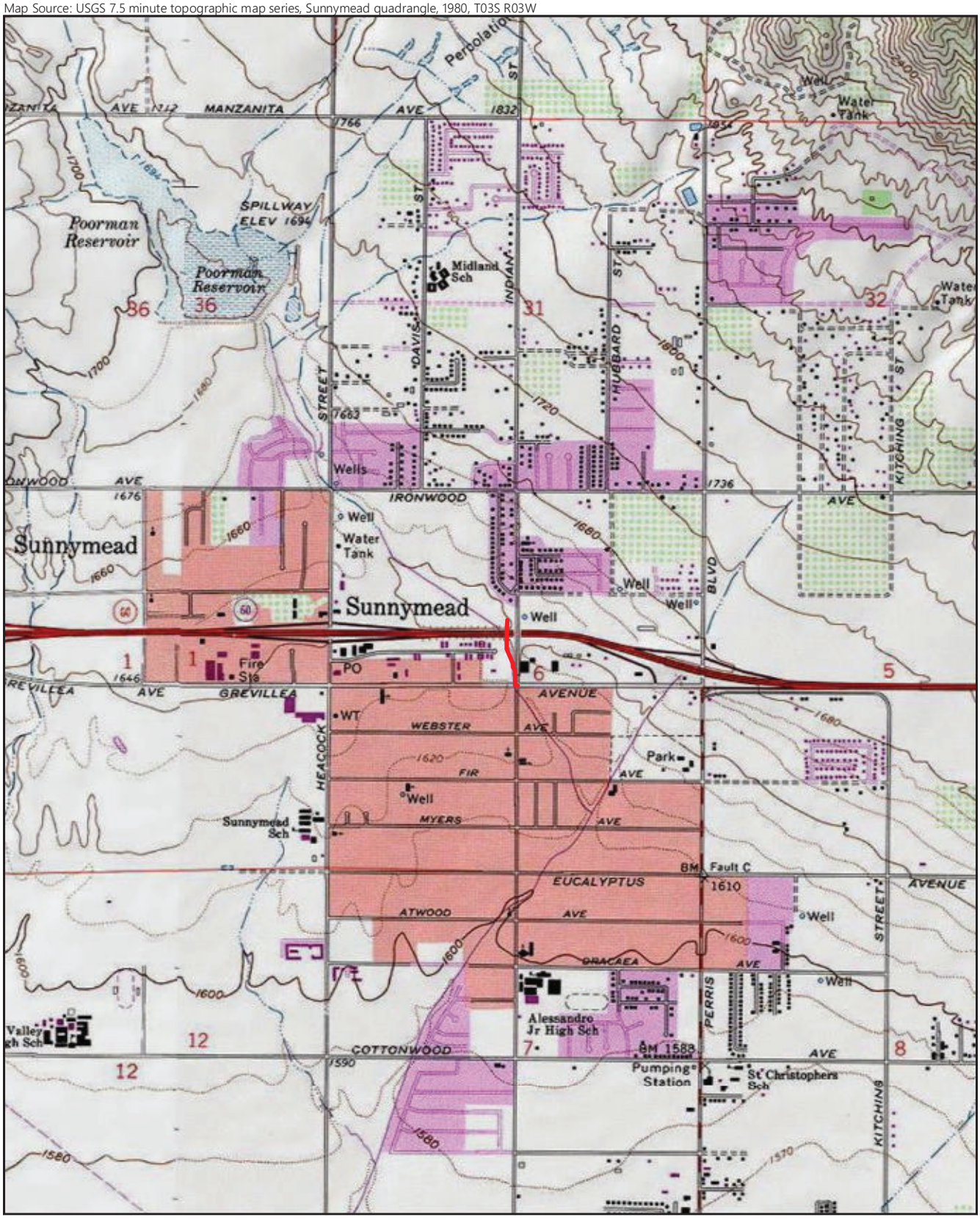
FIGURE 1
Regional Location

Map Source: USGS 7.5 minute topographic map series, Sunnymead quadrangle, 1980, T03S R03W



0 Feet 2,000

Project Alignment

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FIGURE 2
Project Location on USGS Map

Image Source: NearMap (flown May 2023)

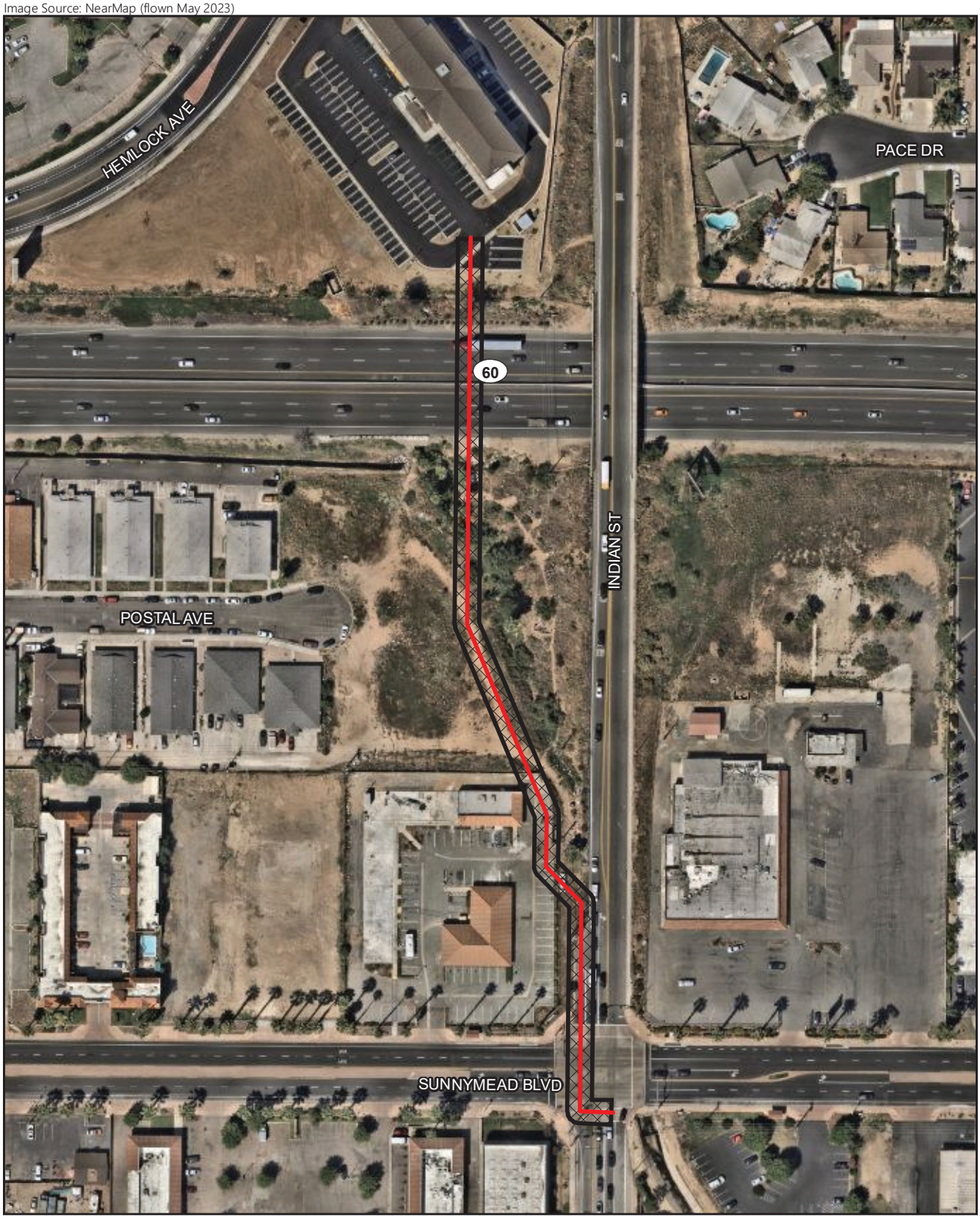

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FIGURE 3
Project Location on Aerial Photograph

PHOTOGRAPH 1
Overview of Southern End of APE at Sunnymead Boulevard and Indian Street Intersection, Looking North

PHOTOGRAPH 2
Overview of Alignment Path Near Southern End of APE, Looking North

PHOTOGRAPH 3
Overview of Alignment Path on West Side of Drainage Within Vacant Lots, Looking Northwest

PHOTOGRAPH 4
Overview of Alignment Path Crossing Channelized Drainage, Looking North

PHOTOGRAPH 5
Overview of Alignment Path Intersecting Southern Manufactured Support Slope of SR-60, Looking North-Northeast

PHOTOGRAPH 6
Overview of Alignment Path on North Side of SR-60, Looking South

ATTACHMENT 1

Native American Heritage Commission Correspondence

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

September 7, 2023

Carmen Zepeda-Herman
RECON Environmental, Inc.

Via Email to: czepeda@reconenvironmental.com

Re: Indian Street / 9878.6 Project, Riverside County

Dear Ms. Zepeda-Herman:

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 me. 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: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Riverside County
9/7/2023

Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Agua Caliente Band of Cahuilla Indians	F	Patricia Garcia, Director of Historic Preservation	5401 Dinah Shore Drive Palm Springs, CA, 92264	(760) 699-6907	(760) 699-6919	pagarcia@aguacaliente.net	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	7/20/2023
Augustine Band of Cahuilla Mission Indians	F	Amanda Vance, Chairperson	84-001 Avenue 54 Coachella, CA, 92236	(760) 398-4722	(760) 369-7161	hhaines@augustinetribe.com	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Cabazon Band of Mission Indians	F	Doug Welmas, Chairperson	84-245 Indio Springs Parkway Indio, CA, 92203	(760) 342-2593	(760) 347-7880	jstapp@cabazonindians-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Cahuilla Band of Indians	F	BobbyRay Esaprza, Cultural Director	52701 CA Highway 371 Anza, CA, 92539	(951) 763-5549		besparza@cahuilla-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	6/28/2023
Cahuilla Band of Indians	F	Daniel Salgado, Chairperson	52701 CA Highway 371 Anza, CA, 92539	(951) 972-2568	(951) 763-2808	chairman@cahuilla-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	6/28/2023
Cahuilla Band of Indians	F	Anthony Madrigal, Tribal Historic Preservation Officer	52701 CA Highway 371 Anza, CA, 92539	(951) 763-5549		anthonymad2002@gmail.com	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	6/28/2023
Los Coyotes Band of Cahuilla and Cupeño Indians	F	Ray Chapparosa, Chairperson	P.O. Box 189 Warner Springs, CA, 92086-0189	(760) 782-0711	(760) 782-0712		Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Morongo Band of Mission Indians	F	Robert Martin, Chairperson	12700 Pumarra Road Banning, CA, 92220	(951) 755-5110	(951) 755-5177	abrierty@morongo-nsn.gov	Cahuilla Serrano	Imperial,Los Angeles,Riverside,San Bernardino,San Diego	
Morongo Band of Mission Indians	F	Ann Brierty, THPO	12700 Pumarra Road Banning, CA, 92220	(951) 755-5259	(951) 572-6004	abrierty@morongo-nsn.gov	Cahuilla Serrano	Imperial,Los Angeles,Riverside,San Bernardino,San Diego	
Pala Band of Mission Indians	F	Alexis Wallick, Assistant THPO	PMB 50, 35008 Pala Temecula Road Pala, CA, 92059	(760) 891-3537		awallick@palatribe.com	Cupeno Luiseno	Orange,Riverside,San Bernardino,San Diego	3/23/2023
Pala Band of Mission Indians	F	Shasta Gaughen, Tribal Historic Preservation Officer	PMB 50, 35008 Pala Temecula Road Pala, CA, 92059	(760) 891-3515	(760) 742-3189	sgaughen@palatribe.com	Cupeno Luiseno	Orange,Riverside,San Bernardino,San Diego	3/23/2023
Pechanga Band of Indians	F	Tuba Ebru Ozdil, Pechanga Cultural Analyst	P.O. Box 2183 Temecula, CA, 92593	(951) 770-6313	(951) 695-1778	eozdil@pechanga-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	8/2/2023
Pechanga Band of Indians	F	Steve Bodmer, General Counsel for Pechanga Band of Indians	P.O. Box 1477 Temecula, CA, 92593	(951) 770-6171	(951) 695-1778	sbodmer@pechanga-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	8/2/2023
Quechan Tribe of the Fort Yuma Reservation	F	Jill McCormick, Historic Preservation Officer	P.O. Box 1899 Yuma, AZ, 85366	(928) 261-0254		historicpreservation@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
Quechan Tribe of the Fort Yuma Reservation	F	Jordan Joaquin, President, Quechan Tribal Council	P.O.Box 1899 Yuma, AZ, 85366	(760) 919-3600		executivesecretary@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
Quechan Tribe of the Fort Yuma Reservation	F	Manfred Scott, Acting Chairman - Kw'ts'an Cultural Committee	P.O. Box 1899 Yuma, AZ, 85366	(928) 210-8739		culturalcommittee@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023

Native American Heritage Commission
Native American Contact List
Riverside County
9/7/2023

Ramona Band of Cahuilla	F	Joseph Hamilton, Chairperson	P.O. Box 391670 Anza, CA, 92539	(951) 763-4105	(951) 763-4325	admin@ramona-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Ramona Band of Cahuilla	F	John Gomez, Environmental Coordinator	P. O. Box 391670 Anza, CA, 92539	(951) 763-4105	(951) 763-4325	jgomez@ramona-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	8/16/2016
Rincon Band of Luiseno Indians	F	Cheryl Madrigal, Cultural Resources Manager/Tribal Historic Preservation Officer	One Government Center Lane Valley Center, CA, 92082	(760) 648-3000		cmadrigal@rincon-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	5/31/2023
Rincon Band of Luiseno Indians	F	Laurie Gonzalez, Tribal Council/Culture Committee Member	One Government Center Lane Valley Center, CA, 92082	(760) 484-4835		lgonzalez@rincon-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	5/31/2023
Rincon Band of Luiseno Indians	F	Denise Turner Walsh, Attorney General	One Government Center Lane Valley Center, CA, 92082	(760) 689-5727		dwalsh@rincon-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	7/7/2023
Rincon Band of Luiseno Indians	F	Joseph Linton, Tribal Council/Culture Committee Member	One Government Center Lane Valley Center, CA, 92082	(760) 803-3548		jlinton@rincon-nsn.gov	Luiseno	Los Angeles,Orange,Riverside,San Bernardino,San Diego,Santa Barbara,Ventura	5/31/2023
San Manuel Band of Mission Indians	F	Alexandra McCleary, Cultural Lands Manager	26569 Community Center Drive Highland, CA, 92346	(909) 633-0054		alexandra.mccleary@sanmanuel-nsn.gov	Serrano	Kern,Los Angeles,Riverside,San Bernardino	3/27/2023
Santa Rosa Band of Cahuilla Indians	F	Lovina Redner, Tribal Chair	P.O. Box 391820 Anza, CA, 92539	(951) 659-2700	(951) 659-2228	lsaul@santarosa-nsn.gov	Cahuilla	Imperial,Los Angeles,Orange,Riverside,San Bernardino,San Diego	
Serrano Nation of Mission Indians	N	Mark Cochrane, Co-Chairperson	P. O. Box 343 Patton, CA, 92369	(909) 528-9032		serranonation1@gmail.com	Serrano	Los Angeles,Riverside,San Bernardino	
Serrano Nation of Mission Indians	N	Wayne Walker, Co-Chairperson	P. O. Box 343 Patton, CA, 92369	(253) 370-0167		serranonation1@gmail.com	Serrano	Los Angeles,Riverside,San Bernardino	4/29/2019
Soboba Band of Luiseno Indians	F	Joseph Ontiveros, Tribal Historic Preservation Officer	P.O. Box 487 San Jacinto, CA, 92581	(951) 663-5279	(951) 654-4198	jontiveros@soboba-nsn.gov	Cahuilla Luiseno	Imperial,Los Angeles,Orange,Riverside,San Bernardino,San Diego	7/14/2023
Soboba Band of Luiseno Indians	F	Jessica Valdez, Cultural Resource Specialist	P.O. Box 487 San Jacinto, CA, 92581	(951) 663-6261	(951) 654-4198	jvaldez@soboba-nsn.gov	Cahuilla Luiseno	Imperial,Los Angeles,Orange,Riverside,San Bernardino,San Diego	7/14/2023
Torres-Martinez Desert Cahuilla Indians	F	Cultural Committee,	P.O. Box 1160 Thermal, CA, 92274	(760) 397-0300	(760) 397-8146	Cultural-Committee@torresmartinez-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	

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 Indian Street / 9878.6 Project, Riverside County.

Record: PROJ-2023-004515
Report Type: List of Tribes
Counties: Riverside
NAHC Group: All

CONFIDENTIAL ATTACHMENT 1

(Under Separate Cover)

APPENDIX D

Geotechnical Investigation Report

Converse Consultants
Geotechnical Engineering
Environmental & Groundwater Science
Inspection & Testing Services

GEOTECHNICAL INVESTIGATION REPORT

INDIAN STREET SEWER CROSSING

Approximately 1,100 Linear Feet of 15-inch Diameter Gravity Sewer
City of Moreno Valley, Riverside County, California

CONVERSE PROJECT NO. 21-81-132-01

Prepared For:

CAROLLO ENGINEERS
5355 Mira Sorrento Place, Suite 270
San Diego, CA 92121

Presented By:

CONVERSE CONSULTANTS
2021 Rancho Drive, Suite 1
Redlands, CA 92373
909-796-0544

September 14, 2022

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

September 14, 2022

Mr. Andrew Frost, PE
Project Manager/Associate
Carollo Engineers
5355 Mira Sorrento Place, Suite 270
San Diego, CA 92121

Subject: **GEOTECHNICAL INVESTIGATION REPORT**
Indian Street Sewer Crossing
Approximately 1,100 Linear Feet of 15-inch Diameter Gravity Sewer
City of Moreno Valley, Riverside County, California
Converse Project No. 21-81-132-01

Dear Mr. Frost:

Converse Consultants (Converse) is pleased to submit this geotechnical investigation report to assist with the design and construction of the Indian Street Sewer Crossing project, located along Indian Street between Sunnymead Boulevard and Hemlock Avenue, in the City of Moreno Valley, Riverside County, California. This report was prepared in accordance with our updated proposal dated May 9, 2022, and Task Order No. 1 dated May 31, 2022.

Based upon our field investigation, laboratory data, and analyses, the project is considered feasible from a geotechnical standpoint, provided the recommendations presented in this report are incorporated into the design and construction of the project.

We appreciate the opportunity to be of service to Carollo Engineers and Eastern Municipal Water District (EMWD). Should you have any questions, please do not hesitate to contact us at 909-796-0544.

CONVERSE CONSULTANTS

Hashmi Quazi, PhD, GE, PE
Principal Engineer

Dist: 3/Addressee
HSQ/RLG/MS/kvg

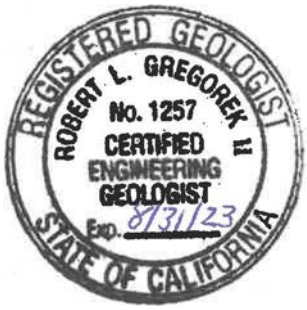
PROFESSIONAL CERTIFICATION

This report has been prepared by the individuals whose seals and signatures appear herein.

The findings, recommendations, specifications, or professional opinions contained in this report were prepared in accordance with generally accepted professional engineering, engineering geologic principles, and practice in this area of Southern California. There is no warranty, either expressed or implied.

Mahmoud Suliman, MS
Staff Engineer

Hashmi S. E. Quazi, PhD, PE, GE
Principal Engineer



Robert L. Gregorek II, PG, CEG
Senior Geologist

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1.0 INTRODUCTION

This report contains the findings of the geotechnical investigation performed by Converse for the Indian Street Sewer Crossing project, located along and parallel to Indian Street overcrossing the SR-60 Freeway, in the City of Moreno Valley, Riverside County, California. The approximate locations are shown in Figure No. 1 *Approximate Alignment Locations Map.*

The purposes of this investigation were to evaluate the nature and engineering properties of the subsurface soils and groundwater conditions, and to provide geotechnical recommendations for the design and construction of the project.

This report was prepared for the project described herein and is intended for use solely by the Carollo Engineers and their authorized agents. This report may be made available to the prospective bidders for bidding purposes. However, the bidders are responsible for their own interpretation of the subsurface conditions between and beyond the boring locations, based on factual data contained in this report. This report may not contain sufficient information for use by others and/or other purposes.

2.0 PROJECT DESCRIPTION

Based on the sewer improvement plans provided by Carollo Engineers on August 8, 2022. We understand the project includes design and construction of approximately 1,100 linear feet of 12 to 15-inch Vitrified Clay Pipe (VCP) sewer pipelines. The pipe invert depth will be approximately 12 to 18 feet below existing ground surface (bgs). We understand that the pipeline will be installed mostly using the open cut-and-cover technique, except at parcels (APN: 481-101-016 and APN: 481-090-037) where the pipe will be bored and jacked under the SR-60 freeway. The details of the pipelines are presented in the following table

Table No. 1, Pipeline Description

Location	From Sta.	To Sta.	Approximate Length (feet)	Approx. Depth (ft)	Pipe Material
Indian Street	10+00.00	12+22.47	222.44	12-14	VCP
Indian St & APN: 481-101-041	12+22.47	13+31.21	108.74	14	VCP
APN: 481-101-041 & APN: 481-101-016	13+31.21	15+50.81	219.59	12-15	VCP
APN: 481-101-016 & SR-60 Freeway	15+50.81[1]	19+12.00[2]	369.19	15-18	VCP[3]
APN: 481-090-037	19+12.00	19+87.13	75.13	18	VCP

Project: Indian Street Sewer Crossing

Location: Approx. 1,100 LF of 15-inch Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA

For: Carollo Engineers

Approximate Alignment Locations Map

Project No.
21-81-132-01

Converse Consultants

Figure No.
1

Location	From Sta.	To Sta.	Approximate Length (feet)	Approx. Depth (ft)	Pipe Material
APN: 481-090-037	19+87.13	21+07.97[4]	120.84	11-14	VCP[5]

Notes:
1- 40 'x 12' Jacking Pit Station
2- 12' X 12' Receiving Pit Station
3- Construction Steel Casing per EMWD STD DWG SB-49
4- Proposed pipeline connecting to existing sewer manhole station
5- V.C.P = Vitrified Clay Pipe

3.0 SCOPE OF WORK

The scope of Converse's investigation is described in the following sections.

3.1 Project Set-up

The project set-up consisted of the following tasks.

- Conducted alignments reconnaissance and marked the borings at locations selected by Carollo Engineers.
- Coordinated with Carollo Engineers, (EMWD) and Tony Baker with Buffalo Construction to access boring locations.
- Notified Underground Service Alert (USA) at least 48 hours prior to drilling to clear the boring locations of any conflict with existing underground utilities.
- Engaged a California-licensed driller to drill exploratory borings.

3.2 Subsurface Exploration

Two exploratory borings (BH-01 and BH-02) were drilled on July 20, 2022. One boring was located on a vacant property (APN: 481-101-016) and the other boring was located at the proposed hotel development property (APN: 481-090-037), in the City of Moreno Valley.

To investigate the subsurface conditions, two borings were advanced to depth of approximately 51.5 below ground surface, using a standard CME 75 drill rig equipped with 8-inch diameter hollow-stem augers.

The approximate locations of the borings are shown on Figure No. 2, *Approximate Boring Locations Map*. A detailed discussion of the subsurface exploration is presented in Appendix A, *Field Exploration*.

Project: Indian Street Sewer Crossing

Location: Approx. 1,100 LF of 15-inch Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA

For: Carollo Engineers

Approximate Boring Locations Map

Project No.
21-81-132-01

Converse Consultants

Figure No.
2

3.3 Laboratory Testing

Representative samples of soils were tested in the laboratory to aid in soil classification, and to evaluate relevant engineering properties of soils. These tests included the following.

- *In-situ* moisture contents and dry densities (ASTM D2216 and D2937)
- Sand Equivalent (ASTM D2419)
- Soil corrosivity (California Test Methods 643, 422, and 417)
- Collapse Potential (ASTM Standard D4546)
- Grain size distribution (ASTM D6913)
- Maximum dry density and optimum-moisture content (ASTM D1557)
- Direct shear (ASTM D3080)

For *in-situ* moisture and dry density data, see the logs of borings in Appendix A, *Field Exploration*. For a description of the laboratory test methods and test results, see Appendix B, *Laboratory Testing Program*.

3.4 Analysis and Report Preparation

Data obtained from the field exploration and laboratory testing program was assembled and evaluated. Geotechnical analyses of the compiled data were performed, followed by the preparation of this report to present our findings, conclusions, and recommendations for the proposed project.

4.0 ALIGNMENT CONDITIONS

The conditions for each alignment are described below.

Indian Street and Sunnymead Boulevard
Indian Street within the proposed pipeline alignment is a paved road overpass SR-60 Freeway with one lane in each direction. Moderate traffic was observed throughout the day with posted speed limit of 35 MPH. The road is surrounded by trees, overhanging streetlamps, landscape, sidewalks, residential houses, commercial properties, and empty lots. Overhead utilities were observed west of Indian Street, north-south oriented. Photograph No. 1 depicts present conditions along the alignment.

Sunnymead Boulevard is a paved road with 2 lanes and bike lane in each direction and a median. Moderate to high traffic was observed through the day with posted speed limit of 35 MPH. Adjacent to the road on either side are trees, overhanging streetlamps, landscape, sidewalks, and commercial properties. Overhead utilities were observed south of Sunnymead Boulevard, west-east oriented. Photograph No. 2 depicts present conditions at the intersection of Indian Street and Sunnymead Boulevard.

Photograph No. 1, Depicts present conditions along Indian Street, facing north.

Photograph No. 2, Depicts present conditions at the intersection of Indian Street and Sunnymead Boulevard, facing east.

Vacant Parcel (APN: 481-101-016)

Within the project limit, the proposed alignment and the 40 feet by 12 feet jacking pit will be located at the vacant parcel (APN: 481-101-016). The parcel is bounded by SR-60 Freeway from the north, Indian Street from the east, commercial properties from the south, and by residential properties and Postal Avenue from the west. The parcel is undeveloped, and the surface is mainly covered with dirt. Trees, minor vegetation, and an open storm drain channel was observed on the east side of the parcel. Photograph No. 3 presents the conditions at the vacant parcel (APN: 481-101-016).

Photograph No. 3, Depicts present conditions at vacant parcel.

Proposed Hotel Development (APN: 481-090-037)

The proposed alignment and the 12 foot by 12 foot receiving pit will be located at the proposed hotel site. The property is bounded by Hemlock Avenue from the north, Indian Street from the east, SR-60 Freeway from the south and a vacant property from the west. At the time of field investigation, the proposed hotel development was graded. Photograph No. 4 presents the conditions at the proposed hotel site.

Photograph No. 4, Depicts conditions at the proposed hotel site.

4.1 Subsurface Profile

Based on the exploratory borings and laboratory test results, the subsurface materials primarily consist of a mixture of sand, silt, clay. Sandy clay, clayey sand, silty sand and sand with silt layers were observed in both borings.

For a detailed description of the subsurface materials encountered in the exploratory borings, see Drawings No. A-2 through A-3, *Logs of Borings,* in Appendix A, *Field Exploration.*

4.2 Excavatability

The subsurface materials along the alignments are expected to be excavatable by conventional heavy-duty earth moving equipment.

The phrase “conventional heavy-duty excavation equipment” is intended to include commonly used equipment such as excavators, scrapers, and trenching machines. It does not include hydraulic hammers (“breakers”), jackhammers, blasting, or other specialized equipment and techniques used to excavate hard earth materials. Selection of an appropriate excavation equipment models should be done by an experienced earthwork contractor.

4.3 Groundwater

Groundwater was not encountered in the borings to the maximum explored depth of approximately 51.5 feet bgs.

The GeoTracker database (SWRCB, 2022) was reviewed for groundwater data from sites within an approximately 1.0-mile radius of the proposed development. Results of that search are as follows:

- THRIFTY #353 (FORMER CHALLENGE #83) (Site No. # T0606500381), located approximately 2,800 feet southeast of the project site reported groundwater at depths ranging approximately from 87.98 to 129.80 feet bgs between 1999 and 2012.
- FASTRIP #13 (Site No. T0606500482) located approximately 3,600 feet southwest of the project site reported groundwater at depths ranging from approximately 92.08 to 114.58 feet bgs between 2004 and 2016.
- SHELL HEACOCK (Site No. T0606526127) located approximately 2,500 feet west of the project site reported groundwater at depths ranging from approximately 73.04 to 100.05 feet bgs between 2004 and 2016.

The National Water Information System (USGS, 2022) was accessed in August of 2022 to establish current and historic groundwater levels located within a one-mile radius of the coordinates. Data from that search is listed below.

Table No. 2, Summary of USGS Groundwater Depth

Site Number	Location	Groundwater Depth Range (ft. bgs)	Date Range
335646117143201	Approximately 2,700 feet northwest of the project site.	111.20	2001

The California Department of Water Resources (DWR, 2022) was accessed in August of 2022 to establish current and historic groundwater levels located within a one-mile radius of the coordinates. Data from that search is listed below.

- Well No. 03S03W06N003S (Station 339347N1172403W001), located approximately 2,200 feet southwest of the project site, reported groundwater at depths ranging from approximately 55.60 to 64.60 feet bgs between 2001 and 2022.
- Well Name EMWD14350 (Station 339347N1172408W001), located approximately 2,200 feet southwest of the project site, reported groundwater at depths ranging from approximately 57.20 to 64.80 feet bgs between 2011 and 2022.
- Well No. 03S04W01J001S (Station 339387N1172448W001), located approximately 3,000 feet southwest of the project site, reported groundwater at depths ranging from approximately 72.80 to 81.80 feet bgs between 2011 and 2022.
- Well Name EMWD12050 (Station 339456N1172431W001), located approximately 2,750 feet northwest of the project site, reported groundwater at depths ranging from approximately 76.00 to 86.90 feet bgs between 2011 and 2019.
- Well No. 02S04W36R002S (Station 339480N1172444W001), located approximately 3,800 feet northwest of the project site, reported groundwater at depths ranging from approximately 82.90 to 91.00 feet bgs between 2011 and 2022.

Historical high groundwater within the project alignments is not known with certainty but is expected to be deeper than approximately 57.20 feet bgs. Please note that the groundwater level could vary depending upon the seasonal precipitation and possible groundwater pumping activity in the site vicinity. Shallow perched groundwater may be present locally, particularly following precipitation or irrigation events.

4.4 Collapse Potential

Soil deposits subjected to collapse/hydro-consolidation generally exist in regions of moisture deficiency. Collapsible soils are generally defined as soils that have potential to suddenly decrease in volume upon increase in moisture content even without an increase in external loads. Moreover, some soils may have a different degree of collapse/hydro-consolidation based on the amount of proposed fill or structure loads. Soils susceptible to collapse/ hydro-consolidation include wind-blown silt, weakly cemented sand, and silt where the cementing agent is soluble (e.g., soluble gypsum, halite), alluvial or colluvial deposits within semi-arid to arid climate, and certain weathered bedrock above the groundwater table.

Granular soils may have a potential to collapse upon wetting in arid climate regions. Collapse/hydro-consolidation may occur when the soluble cements (carbonates) in the

soil matrix dissolve, causing the soil to densify from its loose/low density configuration from deposition.

The degree of collapse of a soil can be defined by the collapse potential value, which is expressed as a percent of collapse of the total sample using the Collapse Potential Test (ASTM D4546). According to the ASTM guideline, the severity of collapse potential is commonly evaluated by the following Table No. 3, *Collapse Potential Values*.

Table No. 3, Collapse Potential Values

Collapse Potential Value (%)	Severity of Problem
0	None
0.1 to 2	Slight
2.1 to 6.0	Moderate
6.0 to 10.0	Moderately Severe
>10	Severe

Based on the laboratory test results there is a collapse potential of 0.11 and 0.26 percent for BH-01 at a depth of 10.0 feet bgs, and BH-02 at a depth of 5.0 feet bgs, respectively. Therefore, a slight collapse potential is anticipated at the site. Collapse potential distress is typically considered a concern when collapse potential is over 2% (LA County, 2013).

4.5 Subsurface Variations

Based on results of the subsurface exploration and our experience, some variations in the continuity and nature of subsurface conditions along the alignment should be anticipated. Because of the uncertainties involved in the nature and depositional characteristics of the earth material, care should be exercised in interpolating or extrapolating subsurface conditions between or beyond the boring locations.

5.0 FAULTING AND SEISMICITY

The approximate distance and seismic characteristics of nearby faults are discussed in the following subsections.

5.1 Faulting

The project alignments are situated in a seismically active region. As is the case for most areas of Southern California, ground-shaking resulting from earthquakes associated with nearby and more distant faults may occur at the project alignments. During the life of the project, seismic activity associated with active faults can be expected to generate moderate to strong ground shaking at the site.

No portion of the project area is located within a currently designated State of California or Riverside County Earthquake Fault Zone (CGS, 2007; Riverside County, 2020). The nearest active fault zones are a Riverside County Fault Zone 2.83 miles to the northeast and the San Jacinto Fault Zone 4.0 miles northeast of the project area.

Table No. 4, *Summary of Regional Faults,* summarizes selected data of known faults capable of seismic activity within 100 kilometers of the centralized coordinates for the project alignments. The data presented below was calculated using the National Seismic Hazard Maps Database (USGS, 2008) and other published geologic data.

Table No. 4, Summary of Regional Faults

Fault Name and Section	Closest Distance (km)	Slip Sense	Length (km)	Slip Rate (mm/year)	Maximum Magnitude
San Jacinto	6.12	strike slip	241	n/a	7.88
S. San Andreas	21.63	strike slip	548	n/a	8.18
Elsinore	30.29	strike slip	241	n/a	7.85
Cucamonga	32.66	thrust	28	5	6.70
Chino, alt 2	33.24	strike slip	29	1	6.80
Chino, alt 1	34.94	strike slip	24	1	6.70
Cleghorn	37	strike slip	25	3	6.80
North Frontal (West)	41.79	reverse	50	1	7.20
San Jose	46.19	strike slip	20	0.5	6.70
Pinto Mtn	49.17	strike slip	74	2.5	7.30
Sierra Madre	50.82	reverse	57	2	7.20
Sierra Madre Connected	50.82	reverse	76	2	7.30
San Joaquin Hills	55.8	thrust	27	0.5	7.10
Helendale-So Lockhart	57.52	strike slip	114	0.6	7.40
Puente Hills (Coyote Hills)	58.69	thrust	17	0.7	6.90
North Frontal (East)	59.45	thrust	27	0.5	7.00
Clamshell-Sawpit	65.4	reverse	16	0.5	6.70
Lenwood-Lockhart-Old Woman Springs	70.94	strike slip	145	0.9	7.50
Newport Inglewood Connected alt 2	71.01	strike slip	208	1.3	7.50
Newport Inglewood Connected alt 1	71.01	strike slip	208	1.3	7.50
Newport-Inglewood (Offshore)	71.01	strike slip	66	1.5	7.00
Puente Hills (Santa Fe Springs)	72.4	thrust	11	0.7	6.70
Raymond	73.93	strike slip	22	1.5	6.80
Newport-Inglewood, alt 1	74.31	strike slip	65	1	7.20
Burnt Mtn	77.1	strike slip	21	0.6	6.80

Fault Name and Section	Closest Distance (km)	Slip Sense	Length (km)	Slip Rate (mm/year)	Maximum Magnitude
Landers	78.91	strike slip	95	0.6	7.40
Eureka Peak	80.16	strike slip	19	0.6	6.70
Johnson Valley (No)	80.85	strike slip	35	0.6	6.90
Elysian Park (Upper)	81.14	reverse	20	1.3	6.70
Puente Hills (LA)	82.43	thrust	22	0.7	7.00
Verdugo	87.41	reverse	29	0.5	6.90
So Emerson-Copper Mtn	90.93	strike slip	54	0.6	7.10
Rose Canyon	92.48	strike slip	70	1.5	6.90
Palos Verdes Connected	92.99	strike slip	285	3	7.70
Palos Verdes	92.99	strike slip	99	3	7.30
Hollywood	94.01	strike slip	17	1	6.70
Coronado Bank	96.91	strike slip	186	3	7.40
Santa Monica Connected alt 2	98.67	strike slip	93	2.4	7.40

(Source: https://earthquake.usgs.gov/cfusion/hazfaults_2008_search/)

5.2 CBC Seismic Design Parameters

Seismic parameters based on the 2019 California Building Code (CBSC, 2019) and ASCE 7-16 are provided in the following table. These parameters were determined using the generalized coordinates and the Seismic Design Maps ATC online tool.

Table No. 5, CBC Mapped Seismic Design Parameters

Seismic Parameters	
Site Coordinates	33.941431°N, 117.235723°W
Site Class	D
Risk Category	III
Mapped Short period (0.2-sec) Spectral Response Acceleration, S_S	1.761g
Mapped 1-second Spectral Response Acceleration, S_1	0.689g
Site Coefficient (from Table 11.4-1), F_a	1.0
Site Coefficient (from Table 11.4-2), F_v	1.7
MCE 0.2-sec period Spectral Response Acceleration, S_{MS}	1.761g
MCE 1-second period Spectral Response Acceleration, S_{M1}	1.171g
Design Spectral Response Acceleration for short period S_{DS}	1.174g
Design Spectral Response Acceleration for 1-second period, S_{D1}	0.781g
Site Modified Peak Ground Acceleration, PGA_M	0.819g

5.3 Secondary Effects of Seismic Activity

In general, secondary effects of seismic activity include surface fault rupture, soil liquefaction, landslides, lateral spreading, and settlement due to seismic shaking, tsunamis, seiches, and earthquake-induced flooding. The site-specific potential for each of these seismic hazards is discussed in the following sections.

Surface Fault Rupture: The alignments are not located within a currently designated State of California or Riverside County Earthquake Fault Zone (CGS, 2007; Riverside County, 2020). There are no known active faults projecting toward or extending across the pipeline alignments. The potential for surface rupture resulting from the movement of nearby major faults is not known with certainty but is considered low.

Liquefaction: Liquefaction is defined as the phenomenon in which a soil mass within about the upper 50 feet of the ground surface suffers a substantial reduction in its shear strength, due the development of excess pore pressures. During earthquakes, excess pore pressures in saturated soil deposits may develop as a result of induced cyclic shear stresses, resulting in liquefaction.

Soil liquefaction occurs during or after strong ground shaking. There are several requirements for liquefaction to occur. They are as follows.

- Soils must be submerged.
- Soils must be loose to medium-dense.
- Ground motion must be intense.
- Duration of shaking must be sufficient for the soils to lose shear resistance.

Based on review of hazard maps, the proposed pipeline alignments are located within a State of California or Riverside County designated zone of liquefaction susceptibility of low to moderate risk of liquefaction (CGS, 2007; Riverside County, 2022). Groundwater was not encountered during the investigation. We anticipate liquefaction potential of the pipeline alignments is low.

Landslides: Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes. Due to the relatively flat nature of the of the pipeline alignments, the potential of landsliding is considered low.

Lateral Spreading: Seismically induced lateral spreading involves primarily lateral movement of earth materials over underlying materials which are liquefied due to ground shaking. It differs from the slope failure in that complete ground failure involving large movement does not occur due to the relatively smaller gradient of the initial ground surface. Lateral spreading is demonstrated by near-vertical cracks with predominantly horizontal movement of the soil mass involved. Due to the relatively flat topography along the alignments, the potential for lateral spreading is considered low.

Tsunamis: Tsunamis are large waves generated in open bodies of water by fault displacement or major ground movement. Due to the inland location of the site, tsunamis are not considered to be a risk.

Seiches: Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Due to the lack of enclosed bodies of water in the vicinity of the pipeline alignments, the risk for seiching is considered low.

Earthquake-Induced Flooding: Dams or other water-retaining structures may fail as a result of large earthquakes. The project area located within the Pigeon Pass, No. 1003-6 (National Dam ID CA000801) dam inundation zone (DSOD, 2022). The risk for earthquake-induced flooding at the project area is considered extremely high.

6.0 LABORATORY TEST RESULTS

Results of physical and chemical tests performed for this project are presented below.

6.1 Physical Testing

Physical test results for alignment are presented in the following table. For detail description of these tests, see Appendix B, *Laboratory Testing Program,* except for the results of in-situ moisture and dry density tests which are presented on the Logs of Borings in Appendix A, *Field Exploration*.

Table No. 6, Physical Properties of Soils

Test	Values	
	Sta. 15+50.81 (BH-02)	Sta. 19+12.00 (BH-01)
In-situ Moisture and Dry Density (ASTM D2216 and ASTM D2937)	118 to 130 pcf and 8 to 11 percent	105 to 115 pcf and 8 to 15 percent
Sand Equivalent (ASTM D2419)	7	14
Grain Size Analysis (ASTM D6913)	SM/SC/ CL	CL
Collapse	0.26%	0.11%
Maximum Dry Density and Optimum Moisture Content (ASTM D1557)	131.5 pcf and 9.3 percent	131.5 pcf and 9.0 percent
Direct Shear (ASTM D3080)	C= 30 and 100psf and ϕ = 29° and 31°	C= 330 and 200 psf and ϕ = 29° and 34°

Note:
1. CL = Sandy Clay, SC = Clayey Sand.
2. pcf = pounds per cubic feet
3. C = cohesion, ϕ = angle of internal friction.

6.2 Chemical Testing - Corrosivity Evaluation

Two representative soil sample were tested to determine minimum electrical resistivity, pH, and chemical content, including soluble sulfate and chloride concentrations. The purposes of these tests were to determine the corrosion potential of soils when placed in contact with common pipe and construction materials. These tests were performed by AP Engineering and Testing, Inc. (Pomona, CA) in accordance with California Test Methods 643, 422, and 417. The test results are summarized in the following table.

Table No. 7, Summary of Corrosivity Test Results

Boring No./Station	Depth (feet)	pH	Soluble Sulfates (CA 417) (ppm)	Soluble Chlorides (CA 422) (ppm)	Min. Resistivity (CA 643) (Ohm-cm)
BH-01/ Sta. 19+12.00	10-15	8.2	75	49	2,075
BH-02/ Sta. 15+50.81	20-21.5	8.3	23	24	1,275

7.0 PIPE SUBGRADE AND TRENCH BACKFILL RECOMMENDATIONS

Recommendations of backfill for pipe trenching and bore-and-jack are presented in the following subsections.

7.1 General

Prior to the start of construction, all existing underground utilities and appurtenances should be located within the vicinity of the proposed alignments. Such utilities should either be protected in-place or removed and replaced during construction as required by the project specifications. All excavations should be conducted in such a manner as not to cause loss of bearing and/or lateral support of existing structures or utilities.

All debris, deleterious material, and surficial soils containing roots and perishable materials should be stripped and removed from the alignment. Deleterious material, including organics, concrete, and debris generated during excavation, should not be placed as fill.

Migration of fines from the surrounding native soils, in the case of water leak from the pipe, must be considered in selecting the gradation of the materials placed within the trench, including bedding, pipe zone and trench zone backfill, as defined in the following sections. Such migration of fines may deteriorate pipe support and may result in settlement/ground loss at the surface.

It should be the responsibility of the contractor to maintain safe working conditions during all phases of construction.

Observations and field tests should be performed by the project soils consultant to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort should be made with adjustment of the moisture content as necessary, until the specified compaction is obtained.

7.2 Pipeline Subgrade Preparation

The final subgrade surface should be level, firm, uniform, free of loose materials, and properly graded to provide uniform bearing and support to the entire section of the pipe placed on bedding material. Protruding oversize particles, larger than 3 inches in dimension, if any, should be removed from the trench bottom and replaced with compacted on-alignment materials.

Any loose, soft and/or unsuitable materials encountered at the pipe sub-grade should be removed and replaced with an adequate bedding material.

During the digging of depressions for proper sealing of the pipe joints, the pipe should rest on a prepared bottom for as near its full length as is practicable.

7.3 Pipe Bedding

Bedding is defined as the material supporting and surrounding the pipe to 1 foot above the pipe. Pipe bedding should follow EMWD Standards Drawing B-286B (attached in Appendix C, *Trench Backfill and Pavement Repair*). Additional information for pipe bedding is provided below.

To provide uniform and firm support for the pipe, compacted granular materials such as clean sand, gravel or ¾-inch crushed aggregate, or crushed rock may be used as pipe bedding material. The sand equivalents of the tested soils were between 7 and 14. Typically, soils with sand equivalent value of 30 or more are suitable to use as pipe bedding material. The pipe designer should determine if the on-site soils are suitable as pipe bedding material.

The type and thickness of the granular bedding placed underneath and around the pipe, if any, should be selected by the pipe designer. The load on the rigid pipes and deflection of flexible pipes and, hence, the pipe design, depends on the type and the amount of bedding placed underneath and around the pipe.

Bedding materials should be vibrated in-place to achieve compaction. Care should be taken to densify the bedding material below the springline of the pipe. Prior to placing the pipe bedding material, the pipe subgrade should be uniform and properly graded to provide uniform bearing and support to the entire section of the pipe placed on bedding material. During the digging of depressions for proper sealing of the pipe joints, the pipe should rest on a prepared bottom for as near its full length as is practicable.

Migration of fines from the surrounding native and/or fill soils must be considered in selecting the gradation of any imported bedding material. We recommend that the pipe bedding material should satisfy the following criteria to protect migration of fine materials.

i. $\frac{D15(F)}{D85(B)} \leq 5$

ii. $\frac{D50(F)}{D50(B)} < 25$

iii. Bedding Materials must have less than 5 percent passing No. 200 sieve (0.0074 mm) to avoid internal movement of fines.

Where,
F = Bedding Material
B = Surrounding Native and/or Fill Soils
*D*15(F) = Particle size through which 15% of bedding material will pass
*D*85(B) = Particle size through which 85% of surrounding soil will pass
*D*50(F) = Particle size through which 50% of bedding material will pass
*D*50(B) = Particle size through which 50% of surrounding soil will pass

If the above criteria do not satisfy, commercially available geofabric used for filtration purposes (such as Mirafi 140N or equivalent) may be wrapped around the bedding material encasing the pipe to separate the bedding material from the surrounding native or fill soils.

7.4 Backfill Materials

No fill should be placed until excavations and/or natural ground preparation have been observed by the geotechnical consultant. Excavated soils should be processed, including removal of roots and debris, removal of oversized particles, mixing, and moisture conditioning, before placing as compacted fill. On-site soils used as fill should meet the following criteria.

- No particles larger than 3 inches in largest dimension.
- Rocks larger than one inch should not be placed within the upper 12 inches of subgrade soils.
- Free of all organic matter, debris, or other deleterious material.
- Expansion index of 30 or less.
- Sand Equivalent greater than 15 (greater than 30 for pipe bedding).
- Contain less than 40 percent fines (passing #200 sieve).

Imported materials, if required, should meet the above criteria prior to being used as compacted fill. Any imported fills should be tested and approved by geotechnical representative prior to delivery to the construction site.

7.5 Compacted Fill Placement

Fill soils should be thoroughly mixed, and moisture conditioned to within ±3 percent of optimum moisture content for coarse soils and 0 to 2 percent above optimum moisture content for fine soils and compacted to at least 90 percent of the laboratory maximum dry density.

Fill materials should not be placed, spread or compacted during unfavorable weather conditions. When work is interrupted by heavy rain, filling operations should not resume until the geotechnical consultant approves the moisture and density conditions of the previously placed fill.

7.6 Trench Zone Backfill

The trench zone is defined as the portion of the trench above the pipe bedding extending up to the final grade level of the trench surface. Excavated on-site soils free of oversize particles and deleterious matter may be used to backfill the trench zone. Trench backfill should follow EMWD Standards. Additional trench backfill recommendations are presented below.

- Trench excavations to receive backfill should be free of trash, debris or other unsatisfactory materials at the time of backfill placement.
- Trench zone backfill should be compacted to at least 90 percent of the laboratory maximum dry density as per ASTM D1557 test method. At least the upper 1 foot of trench backfill underlying pavement should be compacted to at least 95 percent of the laboratory maximum dry density as per ASTM D1557 test method.
- Particles larger than 1 inch should not be placed within 12 inches of the pavement subgrade. No more than 30 percent of the backfill volume should be larger than ¾-inch in the largest dimension. Gravel should be well mixed with finer soil. Rocks larger than 3 inches in the largest dimension should not be placed as trench backfill.
- Trench backfill should be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers or mechanical tampers to achieve the density specified herein. The backfill materials should be brought to within ± 3 percent of optimum moisture content for coarse-grained soil, and between optimum and 2 percent above optimum for fine-grained soil, then placed in horizontal layers. The thickness of uncompacted layers should not exceed 8 inches. Each layer should be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.
- The contractor should select the equipment and processes to be used to achieve the specified density without damage to adjacent ground, structures, utilities and completed work.
- The field density of the compacted soil should be measured by the ASTM D1556 (Sand Cone) or ASTM D6938 (Nuclear Gauge) or equivalent.

- Trench backfill should not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations should not resume until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are in compliance with project specifications.

7.7 Backfill of Jacking and Receiving Pits

The bore-and-jack crossing will require jacking and receiving pits. Based on the Sewer Improvement plans provided by Carollo Engineers on August 8, 2022. We anticipate that the depth of the boring/jacking pit located at parcel (APN: 481-101-016) is approximately 15.0 feet bgs. The anticipated depth of the receiving pit located at parcel (APN: 481-090-037) is approximately 17.0 feet bgs.

The pit bottoms should be free of trash, debris or other unsatisfactory materials at the time of backfill placement. The bottoms of the excavations should be scarified to a minimum depth of 12 inches below subgrade, moisture conditioned to within 3 percent of optimum moisture content, and recompacted to at least 90 percent of the laboratory maximum dry density.

The backfill soils should be well-blended, and moisture conditioned to within 3 percent of optimum moisture content. Particles larger than 6 inches should not be used as backfill materials. The backfill should be placed in loose lifts not exceeding 8 inches in thickness and compacted to at least 90 percent of the laboratory maximum dry density per ASTM Standard D1557. If the ground surface is to be paved, the backfill within 12 inches of the pavement subgrade should be compacted to at least 95 percent of the laboratory maximum dry density. Shoring should be removed gradually while backfilling to prevent side soils from caving.

The contractor should select the equipment and processes to be used to achieve the specified density without damage to adjacent ground, existing facilities, utilities, or completed work.

7.8 Roadway Repair

Pavement sections should follow the City of Moreno Valley Standard Plans MVSI-132A-2 and MVSI-132B-3 (attached in Appendix C, *Trench Backfill and Pavement Repair*). At or near the completion of grading, the subgrade should be tested to evaluate the actual subgrade R-value for final pavement design.

8.0 DESIGN RECOMMENDATIONS

General design recommendations, resistance to lateral loads, pipe design parameters, bearing pressures, and soil corrosivity are discussed in the following subsections.

8.1 General

Where pipes connect to rigid structures and are subjected to significant loads as the backfill is placed to finish grade, we recommend that provisions be incorporated in the design to provide support of these pipes where they exit the structures. Consideration can be given to flexible connections, concrete slurry support beneath the pipes where they exit the structures, overlaying the pipes with a few inches of compressible material, (i.e., Styrofoam, or other materials), or other techniques.

The various design recommendations provided in this section are based on the assumption that the above earthwork recommendations will be implemented.

8.2 Resistance to Lateral Loads

Resistance to lateral loads can be assumed to be provided by passive earth pressures and friction between construction materials and native soils. The resistance to lateral loads were estimated by using on-site native soils strength parameters obtained from laboratory testing. The resistance to lateral loads recommended for use in design of thrust blocks are presented in the following table.

Table No. 8, Resistance to Lateral Loads

Soil Parameters	Value
Passive earth pressure (psf per foot of depth)	250
Maximum allowable bearing pressure against native soils (psf)	2,500
Coefficient of friction between formed concrete and native soils, fs	0.35

8.3 Soil Parameters for Pipe Design

Structural design requires proper evaluation of all possible loads acting on pipe. The stresses and strains induced on buried pipe depend on many factors, including the type of soil, density, bearing pressure, angle of internal friction, coefficient of passive earth pressure, and coefficient of friction at the interface between the backfill and native soils. The recommended values of the various soil parameters for design are provided in the following table.

Table No. 9, Soil Parameters for Pipe Design

Soil Parameters	Sta. 19+12.00	Sta. 15+50.81
	BH-01	BH-02
Average compacted fill total unit weight (assuming 92% relative compaction), γ (pcf)	133	134
Angle of internal friction of soils, ϕ	29	31

Soil Parameters	Sta. 19+12.00	Sta. 15+50.81
	BH-01	BH-02
Soil cohesion, c (psf)	330	100
Coefficient of friction between concrete and native soils, fs	0.35	0.35
Coefficient of friction between VCP pipe and native soils, fs	0.30	0.30
Bearing pressure against native soils (psf)	2,500	2,500
Coefficient of passive earth pressure, Kp	2.88	3.12
Coefficient of active earth pressure, Ka	0.35	0.32
Modulus of Soil Reaction E' (psi)	1,500	1,500

8.4 Bearing Pressure for Anchor and Thrust Blocks

An allowable net bearing pressure presented in Table No. 9, *Soil Parameters for Pipe Design* may be used for anchor and thrust block design against alluvial soils. Such thrust blocks should be at least 18 inches wide.

If normal code requirements are applied for design, the above recommended bearing capacity and passive resistances may be increased by 33 percent for short duration loading such as seismic or wind loading.

8.5 Soil Corrosivity

The results of chemical testing of two representative soil samples from the borings were evaluated for corrosivity evaluation with respect to common pipe and construction materials such as concrete and steel. The test results are presented in Appendix B, *Laboratory Testing Program,* and are discussed below.

The sulfate content of the sampled soil corresponds to American Concrete Institute (ACI) exposure category S0 for this sulfate concentration (ACI 318-14, Table 19.3.1.1). No concrete type restrictions are specified for exposure category S0 (ACI 318-14, Table 19.3.2.1). A minimum compressive strength of 2,500 psi is recommended.

We anticipate that concrete structures (if any) will be exposed to moisture from precipitation and irrigation. Based on the alignment location and the results of chloride testing of the soils, we do not anticipate concrete structures will be exposed to external sources of chlorides, such as deicing chemicals, salt, brackish water, or seawater. ACI specifies exposure category C1 where concrete is exposed to moisture, but not to external sources of chlorides (ACI 318-14, Table 19.3.1.1). ACI provides concrete design recommendations in ACI 318-14, Table 19.3.2.1, including a compressive strength of at least 2,500 psi and a maximum chloride content of 0.3 percent.

According to Romanoff, 1957, the following table provides general guideline of soil corrosion based on electrical resistivity.

Table No. 10, Correlation Between Resistivity and Corrosion

Soil Resistivity (ohm-cm) per Caltrans CT 643	Corrosivity Category
Over 10,000	Mildly corrosive
2,000 – 10,000	Moderately corrosive
1,000 – 2,000	Corrosive
Less than 1,000	Severe corrosive

The minimum electrical resistivities along pipeline alignments when saturated were 1,275 to 2,075 ohm-cm. These values indicate that the tested soils are corrosive to moderately corrosive to ferrous metals in contact with the soils. Converse does not practice in the area of corrosion consulting. If needed, a qualified corrosion consultant should provide appropriate corrosion mitigation measures for any ferrous metals in contact with the site soils.

8.6 Jacking Force

The pipe jacking force is function of soil conditions, over burden pressure, pipe weight, size, annular space between pipe and soil, lubricant of the pipe, and installation time. The jacking force is equal to penetration resistance plus frictional resistance. Proper assessment of jacking force is required to design and select jacking pipes and thrust block.

The penetration resistance varies along the bore-and-jack depending on soil type and shape and steering action of the boring head.

Design parameters presented Table No. 11, *Jacking System Design Parameters*, may be used to design jacking force system.

Table No. 11, Jacking System Design Parameters

Locations	Parameter	Value
Sta. 15+50.81 BH-02 (APN: 481-101-016)	Bearing Pressure (psf)	2,500
	At-rest Lateral Earth Pressure (psf)	64
	Passive Earth Pressure (psf)	250
	Soil Unit weight (pcf)	120
	Friction, between soil and steel	0.25

We recommend that the ultimate compressive strength of the pipe should be at least 2.5 times the design jacking loads of the pipe.

The pipe designer should determine an appropriate factor of safety to be incorporated into the design of thrust block. The bore-and-jack contractor is responsible for selection of jacking force system and the final design of thrust blocks.

The jacking operations should always be controlled to minimize loss of ground. Steel casing sections should be jacked forward concurrently with the boring operation to provide continuous ground support.

A welded steel pipe casing is required to be installed at the crossing location. The annulus should be injected with cellular concrete or grout to fill any possible voids created by the crossing operation.

9.0 CONSTRUCTION CONSIDERATIONS

Construction recommendations are presented in the next page.

9.1 General

Prior to the start of construction, all existing underground utilities should be located along the pipeline alignments. Such utilities should either be protected in-place or removed and replaced during construction as required by the project specifications.

Vertical braced excavations are feasible along the pipeline alignments. Sloped excavations may not be feasible in locations adjacent to existing utilities (if any).

Where the side of the excavation is a vertical cut, it should be adequately supported by temporary shoring to protect workers and any adjacent structures.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act, current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by the owner's representative and the competent person employed by the contractor in accordance with regulations. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

9.2 Temporary Sloped Excavations

Temporary open-cut trenches may be constructed in areas not adjacent to existing underground utilities improvements with side slopes as recommended in the table below. Temporary cuts encountering soft and wet fine-grained soils, dry loose, cohesionless soils, or loose fill from trench backfill may have to be constructed at a flatter gradient than presented below.

Table No. 12, Slope Ratios for Temporary Excavations

Soil Type	OSHA Soil Type	Depth of Cut (feet)	Recommended Maximum Slope (Horizontal:Vertical)[1]
Sandy Clay (CL), Clayey Sand (SC)	C	0-10	1.5:1
		10-20	2:1

[1] Slope ratio is assumed to be constant from top to toe of slope, with level adjacent ground.

For shallow excavations up to 4.0 feet bgs, slope can be vertical. For steeper temporary construction slopes or deeper excavations, or unstable soil encountered during the excavation, shoring or trench shields should be provided by the contractor as necessary to protect the workers in the excavation.

Surfaces exposed in sloped excavations should be kept moist but not saturated to retard raveling and sloughing during construction. Adequate provisions should be made to protect the slopes from erosion during periods of rainfall. Surcharge loads, including construction materials, should not be placed within 5 feet of the unsupported slope edge. Stockpiled soils with a height higher than 6 feet will require greater distance from trench edges.

9.3 Shoring Design

Temporary shoring will be required where open sloped excavations will not be feasible due to unstable soils or due to nearby existing structures or facilities. Temporary shoring may consist of conventional soldier piles and lagging or sheet piles or any piles selected by contractor. The shoring for the pipe excavations may be laterally supported by walers and cross bracing or may be cantilevered. Drilled excavations for soldier piles will require the use of drilling fluids to prevent caving and to maintain an opened hole for pile installation.

The active earth pressure behind any shoring depends primarily on the allowable movement, type of backfill materials, backfill slopes, wall inclination, surcharges, and any hydrostatic pressures.

The lateral earth pressures to be used in the design of shoring is presented in the following table.

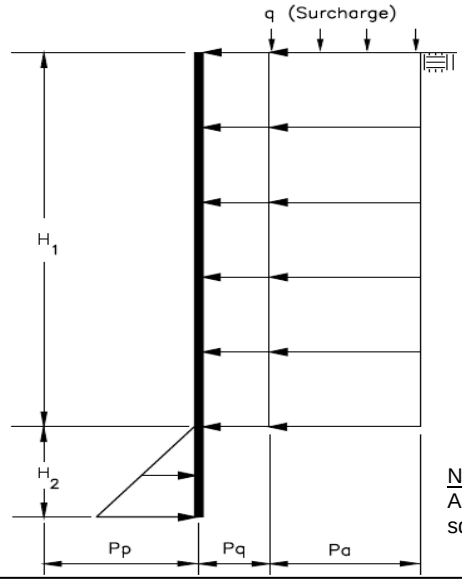
Table No. 13, Lateral Earth Pressures for Temporary Shoring

Lateral Resistance Soil Parameters*	Value
Active Earth Pressure (Braced Shoring) (psf) (A)	26
Active Earth Pressure (Cantilever Shoring) (psf) (B)	43
At-Rest Earth Pressure (Cantilever Shoring) (psf) (C)	64
Passive earth pressure (psf per foot of depth) (D)	250
Maximum allowable bearing pressure against native soils (psf) (E)	2,500
Coefficient of friction between sheet pile and native soils, fs (F)	0.25

* Parameters A through F are used in Figures No. 3 and 4 below.

Restrained (braced) shoring systems should be designed based on Figure No. 3, *Lateral Earth Pressures for Temporary Braced Excavation* to support a uniform rectangular lateral earth pressure.

Figure No. 3, Lateral Earth Pressures for Temporary Braced Excavation



Total Earth Pressure, P

P = Pq + Pa

Pq = 0.5q - incremental surcharge pressure

Pa = (A)H_1 - active earth pressure (Braced walls)

Lateral Pressure Resistance

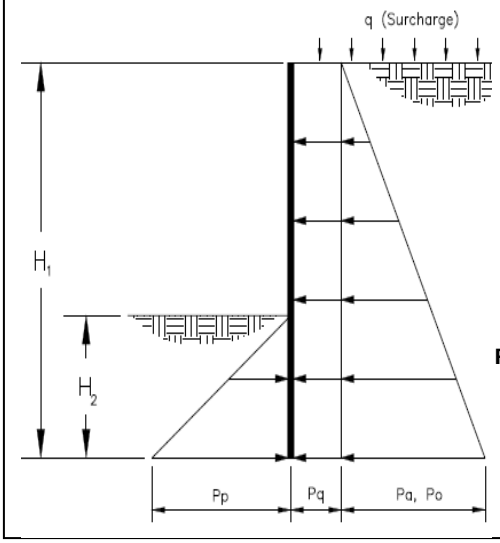
Pp = (D) H_2 ≤ (E) psf - passive earth pressure (on native soils)

μ = (F) - ultimate friction coefficient between steel sheet piles and soil

Note:
All values of height (H) in feet, pressure (P) and surcharge (q) in pounds per square foot (psf).

Unrestrained (cantilever) design of cantilever shoring consisting of soldier piles spaced at least two diameters on-center or sheet piles, can be based on Figure No. 4, *Lateral Earth Pressures on Temporary Cantilever Wall*.

Figure No. 4, Lateral Earth Pressures on Temporary Cantilever Wall



Total Earth Pressure, P

P = Pq + Pa, Po

Pq = 0.5q - incremental surcharge pressure

Pa = (B)H_1 - active earth pressure (Un-restrained)

Po = (C)H_1 - at rest earth pressure (Restrained)

Lateral Pressure Resistance

Pp = (D) H_2 ≤ (E) psf - passive earth pressure (on native soils)

μ = (F) - ultimate friction coefficient between steel sheet piles and soil

Note:
All values of height (H) in feet, pressure (P) and surcharge (q) in pounds per square foot (psf).

The provided pressures assume no hydrostatic pressures. If hydrostatic pressures are allowed to build up, the incremental earth pressures below the ground-water level should be reduced by 50 percent and added to hydrostatic pressure for total lateral pressure.

Passive resistance includes a safety factor of 1.5. The upper 1 foot for passive resistance should be ignored unless the surface is confined by a pavement or slab.

In addition to the lateral earth pressure, surcharge pressures due to miscellaneous loads, such as soil stockpiles, vehicular traffic or construction equipment located adjacent to the shoring, should be included in the design of the shoring. A uniform lateral pressure of 100 psf should be included in the upper 10 feet of the shoring to account for normal vehicular and construction traffic within 10 feet of the trench excavation. As previously mentioned, all shoring should be designed and installed in accordance with state and federal safety regulations.

The contractor should have provisions for soldier pile and sheet pile removal. All voids resulting from removal of shoring should be filled. The method for filling voids should be selected by the contractor, depending on construction conditions, void dimensions and available materials. The acceptable materials, in general, should be non-deleterious, and able to flow into the voids created by shoring removal (e.g., concrete slurry, “pea” gravel, etc.).

Excavations for the proposed pipeline should not extend below a 1:1 horizontal:vertical (H:V) plane extending from the bottom of any existing structures, utility lines or streets. Any proposed excavation should not cause loss of bearing and/or lateral supports of the existing utilities or streets.

If the excavation extends below a 1:1 (H:V) plane extending from the bottom of the existing structures, utility lines or streets, a maximum of 10 feet of slope face parallel to the existing improvement should be exposed at a time to reduce the potential for instability. Backfill should be accomplished in the shortest period of time and in alternating sections.

9.4 Trenchless Pipe Crossing Recommendations

Trenchless pipe crossing recommendations are presented in the following subsections.

9.4.1 Ground Classification for Trenchless Pipe Crossing

The Tunnelman's Ground Classification (USDOT, 2009) categorizes predictive soil behaviors for saturated and unsaturated conditions as presented in the Table No. 14, *Tunnelman's Ground Classification for Soils*.

Table No. 14, Tunnelman's Ground Classification for Soils

Ground Classification	Ground Behavior	Typical Soil Types
Hard	Tunnel heading may be advanced without roof support.	Cemented sand and gravel and over-consolidated clay above the ground water table.
Firm	Heading can be advanced without initial support, and final lining can be constructed before ground starts to move.	Loess above water table; hard clay, marl, cemented sand and gravel when not highly overstressed.
Raveling	Chunks or flakes of material begin to drop out of the arch or walls sometime after the ground has been exposed, due to loosening or to over-stress and "brittle" fracture (ground separates or breaks along distinct surfaces, opposed to squeezing ground). In fast raveling ground, the process starts within a few minutes, otherwise the ground is slow raveling.	Residual soils or sand with small amounts of binder may be fast raveling below the water tale, slow raveling above. Stiff fissured clays may be slow or fast raveling depending upon degree of overstress.
Squeezing	Ground squeezes or extrudes plastically into tunnel, without visible fracturing or loss of continuity, and without perceptible increase in water content. Ductile, plastic yield and flow due to overstress.	Ground with low frictional strength. Rate of squeeze depends on degree of overstress. Occurs at shallow to medium depth in clay of very soft to medium consistency. Stiff to hard clay under high cover may move in combination of raveling at excavation surface and squeezing at depth behind surface.

Ground Classification	Ground Behavior	Typical Soil Types
Swelling	Ground absorbs water, increases in volume, and expands slowly into the tunnel.	Highly pre-consolidated clay with plasticity index in excess of about 30, generally containing significant percentages of montmorillonite.
Running	Granular materials without cohesion are unstable at a slope greater than their angle of repose (approx. 30º -35º). When exposed at steeper slopes they run like granulated sugar or dune sand until the slope flattens to the angle of repose.	Clean, dry angular materials.
Cohesive Running	Granular materials without cohesion are unstable at a slope greater than their angle of repose (approx. 30º -35º). When exposed at steeper slopes they run like granulated sugar or dune sand until the slope flattens to the angle of repose.	Apparent cohesion in moist sand, or weak cementation in any granular soil, may allow the material to stand for a brief period of raveling before it breaks down and runs.

It is our opinion that trenchless construction at the proposed location can be accomplished by an experienced contractor using bore and jack equipment. Provisions for controlling raveling and running sandy soils should be provided during the trenchless operation to minimize ground loss and ground subsidence.

It is the contractor's responsibility to design and select the appropriate bore and jack construction method, support system and to follow the requirements of the health and safety rules of the State of California pertaining to tunnel construction and permit requirements of the Riverside County, and other local agencies, if applicable.

9.4.2 Bore and Jack Construction Recommendations

Bore-and-jack is a trenchless construction method for installing pipes where open-cut technique is not feasible. This is a multi-stage process of construction which includes a temporary horizontal jacking platform and a starting alignment track in an entrance pit at a desired elevation. Manual control is used to jack the pipe at the starting point of the alignment with simultaneous excavation of the soil being accomplished by a rotating cutting head in the leading edge of the pipe's annular space.

The selection of trenchless pipe crossing methods and equipment depends on pipe material, length of crossing, and anticipated ground conditions, and should be made by the contractor. Bore-and-jack pipe construction operations involve the initial construction of a jacking/tunneling pit and a receiving pit at each end of the pipe segment to be jacked. Site-specific ground conditions and soil classifications pertaining to this project are presented in the following table.

Table No. 15, Site-Specific Ground Classifications

Crossing Location	Boring No.	Boring Depth (Feet)	Station No. (Approx.)	Soil Types anticipated near Casing Profile	Ground Classification near Casing Profile
APN: 481-090-037[1] (N. of SR-60 FWY)	BH-01	51.5	19+12.00	SC/CL	Blows 7/20/28[3] and 8/20/27[4]. Moisture 11 and 14 percent. No groundwater encountered.
APN: 481-101-016[2] (S. of SR-60 FWY)	BH-02	51.5	15+50.81	SC/CL	Blows 7/12/18[3] and 8/15/21[4]. Moisture 13 and 15 percent. No groundwater encountered.

Notes:
1- Proposed Hotel Development
2- Vacant property
3- CA sampler blow counts
4- SPT sampler blow counts

The working/access shafts are utilized to remove the spoil and to transport the construction materials and personnel for a bore-and-jack project. The vertical face of the working shaft may be shored with sheet piles and/or soldier piles and lagging. The face of the shaft also can be supported by ribs and laggings. The design of sheet piling, soldier beam and lagging system may be designed according to the recommendations provided in Section 9.3, *Shoring Design*. Frequent contact grouting may be necessary to reinforce the support during construction.

The total load that can be developed in the jacking plate would depend on the depth and area of the plate. The jacking equipment should not impose a reaction of more than the allowable net bearing pressure summarized in Table No. 11, *Jacking System Design Parameters* on the stabilized soils within the jacking pit.

Grouting through the pipe casing after jacking is recommended to fill any possible voids created by the jacking operation. Jacking operations should be performed in accordance with the Standard Specifications for Public Works Construction, Sections 306-2 and 306-3 (Public Works Standards, 2018). Contractor should maintain standard grouting method so that no heave occurs.

Excavation procedures and shoring systems should be properly designed and implemented/installed to minimize the effect of settlement during construction. The contractor is responsible for minimizing impacts of crossing operations. Ground distress potential along a crossing alignment depends on a number of factors, including type of soils, type of face support, internal pressure maintained to support the face, length of unlined zone, if any, and the amount of gap between the shield and the surrounding soils. The potential of any significant ground distress at the surface can be minimized by selecting the proper equipment and construction method.

The zone of influence of properly performed pipe crossing should be limited to a distance of about 2D above the crown of the shield, where D is the diameter of the shield. When the depth of crown cover is about 2D or more, maximum ground surface settlement, if any, can be expected to be less than the thickness of the gap around the pipe. Higher ground settlement may occur for less depth of cover and inadequately supported pits can induce significant ground movement or even collapse.

It is the contractor's responsibility to document the existing pre-construction conditions of streets and any facilities and monitor deformations during construction. We recommend that the ground surface above crossing operations be continuously monitored during construction using a surface settlement monument to make sure any vertical and horizontal movements are within allowable limits. Corrective action will be required by the contractor if deformations exceed the allowable limits.

10.0 CLOSURE

This report is prepared for the project described herein and is intended for use solely by Carollo Engineers and their authorized agents, to assist in the design and construction of the proposed project. Our findings and recommendations were obtained in accordance with generally accepted professional principles practiced in geotechnical engineering. We make no other warranty, either expressed or implied.

Converse is not responsible or liable for any claims or damages associated with interpretation of available information provided to others. Field exploration identifies actual soil conditions only at those points where samples are taken, when they are taken. Data derived through sampling and laboratory testing is extrapolated by Converse employees who render an opinion about the overall soil conditions. Actual conditions in areas not sampled may differ. In the event that changes to the project occur, or additional, relevant information about the project is brought to our attention, the recommendations contained in this report may not be valid unless these changes and additional relevant information are reviewed, and the recommendations of this report are modified or verified in writing. In addition, the recommendations can only be finalized by observing actual subsurface conditions revealed during construction. Converse cannot be held responsible for misinterpretation or changes to our recommendations made by others during construction.

As the project evolves, continued consultation and construction monitoring by a qualified geotechnical consultant should be considered an extension of geotechnical investigation services performed to date. The geotechnical consultant should review plans and specifications to verify that the recommendations presented herein have been appropriately interpreted, and that the design assumptions used in this report are valid. Where significant design changes occur, Converse may be required to augment or modify the recommendations presented herein. Subsurface conditions may differ in some locations from those encountered in the explorations, and may require additional analyses and, possibly, modified recommendations.

Design recommendations given in this report are based on the assumption that the recommendations contained in this report are implemented. Additional consultation may be prudent to interpret Converse's findings for contractors, or to possibly refine these recommendations based upon the review of the actual site conditions encountered during construction. If the scope of the project changes, if project completion is to be delayed, or if the report is to be used for another purpose, this office should be consulted.

11.0 REFERENCES

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Appendix A

Field Exploration

APPENDIX A

FIELD EXPLORATION

Our field investigation included alignments reconnaissance and a subsurface exploration program consisting of drilling soil borings. During the alignment reconnaissance, the surface conditions were noted, and the borings were marked at locations provided by Carollo Engineers. The boring locations should be considered accurate only to the degree implied by the method used to mark them in the field.

Two exploratory borings (BH-01 and BH-02) were drilled on July 20, 2022, to investigate the subsurface conditions. The borings were drilled to the depths of approximately 51.5 feet bgs.

Borings were advanced using a truck-mounted drill rig equipped with 8-inch diameter hollow-stem augers for soil sampling. Encountered earth materials were continuously logged by a Converse engineer and visually classified in the field in accordance with the Unified Soil Classification System. Where appropriate, field descriptions and classifications have been modified to reflect laboratory test results.

Relatively undisturbed samples were obtained using California Modified Samplers (2.4 inches inside diameter and 3 inches outside diameter) lined with thin sample rings. The steel ring sampler was driven into the bottom of the borehole with successive drops of a 140-pound driving weight falling 30 inches. Blow counts at each sample interval are presented on the boring logs. Samples were retained in brass rings (2.4-inches inside diameter and 1 inch in height) and carefully sealed in waterproof plastic containers for shipment to the Converse laboratory. Bulk samples of typical soil types were also obtained.

Standard Penetration Testing (SPT) was also performed in borings (BH-01 and BH-02) in accordance with the ASTM Standard D1586 test method at 10-foot intervals beginning at 20 feet bgs using a standard (1.4 inches inside diameter and 2.0 inches outside diameter) split-barrel sampler. The mechanically driven hammer for the SPT sampler was 140 pounds, falling 30 inches for each blow. The recorded blow counts for every 6 inches for a total of 1.5 feet of sampler penetration are shown on the Logs of Borings.

The exact depths at which material changes occur cannot always be established accurately. Unless a more precise depth can be established by other means, changes in material conditions that occur between driven samples are indicated in the log at the top of the next drive sample.

Following the completion of logging and sampling, borings were backfilled with soil cuttings mixed with cement and compacted by pushing down with augers using drill rig weight. If construction is delayed, the surface may settle over time. We recommend the owner

monitor the boring locations and backfill any depressions that might occur or provide protection around the boring locations to prevent trip and fall injuries from occurring near the area of any potential settlement.

For a key to soil symbols and terminology used in the boring logs, refer to Drawing No. A-1a and A-1b, *Unified Soil Classification and Key to Boring Log Symbols*. Logs of the exploratory borings are presented in Drawings No. A-2 and A-3, *Logs of Borings.*

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE			GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE			SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

FIELD AND LABORATORY TESTS

C	Consolidation (ASTM D 2435)
CL	Collapse Potential (ASTM D 4546)
CP	Compaction Curve (ASTM D 1557)
CR	Corrosion, Sulfates, Chlorides (CTM 643-99; 417; 422)
CU	Consolidated Undrained Triaxial (ASTM D 4767)
DS	Direct Shear (ASTM D 3080)
EI	Expansion Index (ASTM D 4829)
M	Moisture Content (ASTM D 2216)
OC	Organic Content (ASTM D 2974)
P	Permeablility (ASTM D 2434)
PA	Particle Size Analysis (ASTM D 6913 [2002])
PI	Liquid Limit, Plastic Limit, Plasticity Index (ASTM D 4318)
PL	Point Load Index (ASTM D 5731)
PM	Pressure Meter
PP	Pocket Penetrometer
R	R-Value (CTM 301)
SE	Sand Equivalent (ASTM D 2419)
SG	Specific Gravity (ASTM D 854)
SW	Swell Potential (ASTM D 4546)
TV	Pocket Torvane
UC	Unconfined Compression - Soil (ASTM D 2166)
	Unconfined Compression - Rock (ASTM D 7012)
UU	Unconsolidated Undrained Triaxial (ASTM D 2850)
UW	Unit Weight (ASTM D 2937)
WA	Passing No. 200 Sieve

BORING LOG SYMBOLS

DRILLING METHOD SYMBOLS

Auger Drilling | Mud Rotary Drilling | Dynamic Cone or Hand Driven | Diamond Core

SAMPLE TYPE

- STANDARD PENETRATION TEST — Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method
- DRIVE SAMPLE 2.42" I.D. sampler (CMS).
- DRIVE SAMPLE No recovery
- BULK SAMPLE
- GROUNDWATER WHILE DRILLING
- GROUNDWATER AFTER DRILLING

SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Converse Consultants

Indian Street Sewer Crossong
Approx. 1,100 LF of 15-INCH Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA
Client: Carollo Engineers

Project No. **21-81-132-01**

Drawing No. **A-1a**

CONSISTENCY OF COHESIVE SOILS

Descriptor	Unconfined Compressive Strength (tsf)	SPT Blow Counts	Pocket Penetrometer (tsf)	CA Sampler	Torvane (tsf)	Field Approximation
Very Soft	<0.25	< 2	<0.25	<3	<0.12	Easily penetrated several inches by fist
Soft	0.25 - 0.50	2 - 4	0.25 - 0.50	3 - 6	0.12 - 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 - 1.0	5 - 8	0.50 - 1.0	7 - 12	0.25 - 0.50	Can be penetrated several inches by thumb with moderate effort
Stiff	1.0 - 2.0	9 - 15	1.0 - 2.0	13 - 25	0.50 - 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2.0 - 4.0	16 - 30	2.0 - 4.0	26 - 50	1.0 - 2.0	Readily indented by thumbnail
Hard	>4.0	>30	>4.0	>50	>2.0	Indented by thumbnail with difficulty

APPARENT DENSITY OF COHESIONLESS SOILS

Descriptor	SPT N_{60}- Value (blows / foot)	CA Sampler
Very Loose	<4	<5
Loose	4- 10	5 - 12
Medium Dense	11 - 30	13 - 35
Dense	31 - 50	36 - 60
Very Dense	>50	>60

MOISTURE

Descriptor	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OF PROPORTION OF SOILS

Descriptor	Criteria
Trace (fine)/ Scattered (coarse)	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

SOIL PARTICLE SIZE

Descriptor		Size
Boulder		> 12 inches
Cobble		3 to 12 inches
Gravel	Coarse	3/4 inch to 3 inches
	Fine	No. 4 Sieve to 3/4 inch
Sand	Coarse	No. 10 Sieve to No. 4 Sieve
	Medium	No. 40 Sieve to No. 10 Sieve
	Fine	No. 200 Sieve to No. No. 40 Sieve
Silt and Clay		Passing No. 200 Sieve

PLASTICITY OF FINE-GRAINED SOILS

Descriptor	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled, and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll, and not much time is required to reach the plastic limit; it cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

CEMENTATION/ Induration

Descriptor	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

NOTE: This legend sheet provides descriptions and associated criteria for required soil description components only. Refer to Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010), Section 2, for tables of additional soil description components and discussion of soil description and identification.

SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Log of Boring No. BH-01

Date Drilled: 7/20/2022 Logged by: Mahmoud Suliman Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILTY SAND (SM):** fine to coarse-grained, dense, moist, brown.						
		ALLUVIUM: **CLAYEY SAND (SC):** fine to coarse-grained, medium dense to dense, moist, brown.	■	▨	9/25/30	8	124	PA, SE
5			■	▨	13/19/21	10	127	
			■		4/6/8	11	118	DS
10		**SANDY CLAY (CL):** fine to coarse-grained sand, stiff, moist, brown.	■	▨	5/6/10	11	122	CL
								CP, CR, PA
15		**CLAYEY SAND (SC):** fine to coarse-grained, dense, moist, brown.	■		7/20/28	11	130	DS
20		- more fine content	⊠		8/20/27	14		
25			■		5/17/29	14	117	
30			⊠		15/19/20	13		PA

Converse Consultants

Indian Street Sewer Crossing
Approx. 1,100 LF of 15-inch Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA
Client: Carollo Engineers

Project No. 21-81-132-01

Drawing No. A-2a

Log of Boring No. BH-01

Date Drilled: 7/20/2022 Logged by: Mahmoud Suliman Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		ALLUVIUM: **CLAYEY SAND (SC):** fine to coarse-grained, very dense, moist, brown.	■		10/36/50-3"	12	126	
40		**SANDY CLAY (CL):** fine to coarse-grained sand, very stiff, moist, brown.	☒		20/17/15	16		
45		**SAND WITH SILT (SP-SM):** fine to coarse-grained, very dense, moist, brown to yellowish brown.	■		30/50-5"	4	123	
50			☒		17/23/50	7		
		End of Boring at 51.5 feet bgs. No groundwater encountered. Borehole backfilled with soil cuttings mixed with cement and compacted by pushing down with augers using the drill rig weight on 07/20/2022.						

Converse Consultants

Indian Street Sewer Crossing
Approx. 1,100 LF of 15-inch Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA
Client: Carollo Engineers

Project No. 21-81-132-01

Drawing No. A-2b

Log of Boring No. BH-02

Date Drilled: 7/20/2022 Logged by: Mahmoud Suliman Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		ALLUVIUM:						
		SANDY CLAY (CL): fine to coarse-grained sand, stiff to very stiff, moist, brown.	■	▨	10/17/14	8	108	
5			■	▨	5/7/8	11	115	CP, PA, SE CL
			■		6/6/7	11	109	DS
10			■	▨	5/10/14	11	75	
				▨				PA
15			■		7/12/18	15	105	DS
20			☒		8/15/21	13		CR
25		**CLAYEY SAND (SC):** fine to coarse-grained, few gravel up to 0.5" maximum dimension, dense, moist, brown.	■		8/20/27	12	127	PA
30		- medium dense	☒		11/11/17	13		

Converse Consultants

Indian Street Sewer Crossing
Approx. 1,100 LF of 15-inch Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA
Client: Carollo Engineers

Project No. **21-81-132-01**

Drawing No. **A-3a**

Log of Boring No. BH-02

Date Drilled: 7/20/2022 Logged by: Mahmoud Suliman Checked By: Robert Gregorek

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): Depth to Water (ft, bgs): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the Boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		ALLUVIUM: **CLAY SAND TO SANDY CLAY (SC-CL):** fine to coarse-grained, dense to very dense/ very stiff to hard, moist, brown.	■		18/34/42	14	120	
40			☒		10/18/21	14		
45			■		12/50-5"	10	128	
		SAND WITH SILT (SP-SM): fine to coarse-grained, dense, dry to moist, brown to yellowish brown.						
50			☒		14/18/18	3		
		End of Boring at 51.5 feet bgs. No groundwater encountered. Borehole backfilled with soil cuttings mixed with cement and compacted by pushing down with augers using the drill rig weight on 07/20/2022.						

Converse Consultants

Indian Street Sewer Crossing
Approx. 1,100 LF of 15-inch Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA
Client: Carollo Engineers

Project No. 21-81-132-01

Drawing No. A-3b

Appendix B

Laboratory Testing Program

APPENDIX B

LABORATORY TESTING PROGRAM

Tests were conducted in our laboratory on representative soil samples for the purpose of classification and evaluation of their physical properties and engineering characteristics. The amount and selection of tests were based on the geotechnical parameters required for this project. Test results are presented herein and on the Logs of Borings, in Appendix A, *Field Exploration*. The following is a summary of the various laboratory tests conducted for this project.

In-Situ **Moisture Content and Dry Density**

In-situ dry density and moisture content tests were performed on relatively undisturbed ring samples, in accordance with ASTM Standard D2216 and D2937 to aid soils classification and to provide qualitative information on strength and compressibility characteristics of the site soils. For test results, see the Logs of Boring in Appendix A, *Field Exploration.*

Sand Equivalent

Two representative soil samples were tested in accordance with the ASTM D2419 test method to determine the sand equivalent. The test results are presented in the following table.

Table No. B-1, Sand Equivalent Test Results

Boring No.	Depth (feet)	Soil Description	Sand Equivalent
BH-01	2.5-7.5	Clayey Sand (SC)	14
BH-02	2.5-7.5	Sandy Clay (CL)	7

Soil Corrosivity

Two representative soil samples were tested by AP Engineering and Testing, Inc. in accordance with California Test Methods 643, 422, and 417, to determine minimum electrical resistivity, pH, and chemical content, including soluble sulfate and chloride concentrations. The purpose of these tests was to determine the corrosion potential of site soils when placed in contact with common pipe materials. Test results are presented on the following table.

Table No. B-2, Summary of Corrosivity Test Results

Boring No./Street	Depth (feet)	pH	Soluble Sulfates (CA 417) (ppm)	Soluble Chlorides (CA 422) (ppm)	Min. Resistivity (CA 643) (Ohm-cm)
BH-01	10.0-15.0	8.2	75	49	2,075
BH-02	20.0-21.5	8.3	23	24	1,275

Collapse

To evaluate the moisture sensitivity (collapse/swell potential) of the encountered soils, two collapse tests were performed in accordance with the ASTM Standard D4546 laboratory procedure. The samples were loaded to approximately 2 kips per square foot (ksf), allowed to stabilize under load, and then submerged. The tests are presented in the following table.

Table No. B-3, Collapse Test Results

Boring No.	Depth (feet)	Soil Classification	Percent Swell (+) Percent Collapse (-)	Collapse Potential
BH-01	10.0-11.5	Clayey Sand (SC)	-0.11	Slight
BH-02	5.0-6.5	Sandy Clay (CL)	-0.26	Slight

Grain-Size Analyses

To assist in classification of soils, mechanical grain-size analyses were performed on six select samples in accordance with the ASTM Standard D6913 test method. Grain-size curves are shown in Drawing No. B-1, *Grain Size Distribution Results* and are presented in the following table.

Table No. B-4, Grain Size Distribution Test Results

Boring No./Street	Depth (ft)	Soil Classification	% Gravel	% Sand	%Silt	%Clay
BH-01	2.5-7.5	Clayey Sand (SC)	4.0	50.4	45.6	
BH-01	10.0-15.0	Sandy Clay (CL)	1.0	33.6	65.4	
BH-01	30.0-31.5	Clayey Sand (SC)	5.0	62.7	32.3	
BH-02	2.5-7.5	Sandy Clay (CL)	2.0	34.9	63.1	
BH-02	10.0-15.0	Sandy Clay (CL)	3.0	46.0	51.0	
BH-02	25.0-26.5	Clayey Sand (SC)	2.0	64.0	34.0	

Maximum Dry Density and Optimum Moisture Content

Laboratory maximum dry density and optimum moisture content relationship tests were performed on two representative bulk sample. The tests were conducted in accordance with ASTM Standard D1557 method. Test results are presented on Drawing No. B-2, *Moisture-Density Relationship Result,* and summarized in the following table.

Table No. B-5, Laboratory Maximum Density Test Results

Boring No.	Depth (feet)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture (%)
BH-01	10.0-15.0	Sandy Clay (CL), Brown	131.5	9.0
BH-02	2.5-7.5	Sandy Clay (CL), Brown	131.5	9.3

Direct Shear

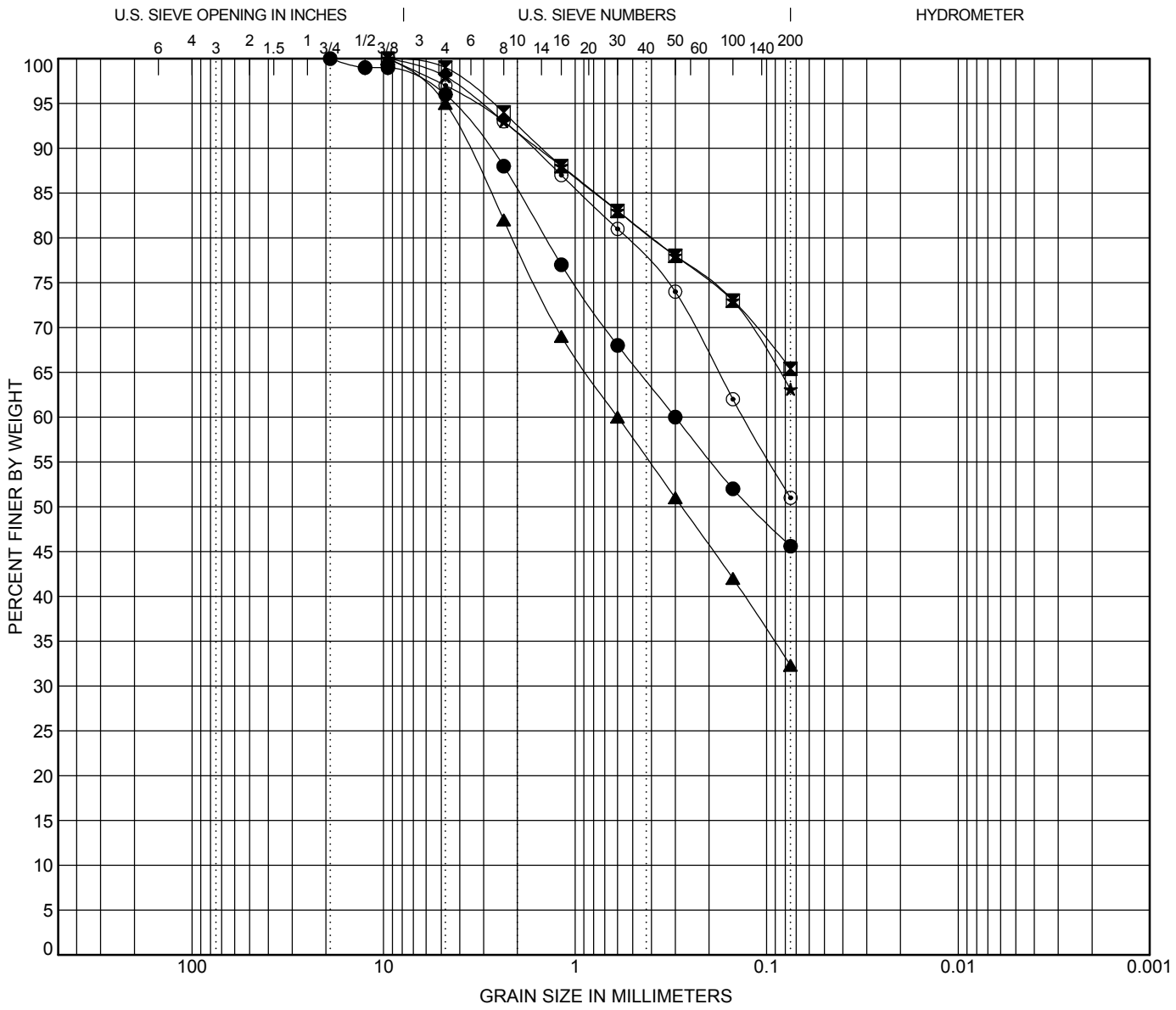
Four direct shear tests were performed on relatively undisturbed representative soil samples under soaked moisture conditions, in accordance with the ASTM D3080 method. For each test, three samples contained in a brass sampler ring were placed, one at a time, directly into the test apparatus and subjected to a range of normal loads appropriate for the anticipated conditions. The samples were then sheared at a constant strain rate of 0.02 inch/minute. Shear deformation was recorded until a maximum of about 0.25-inch shear displacement was achieved. Ultimate strength was selected from the shear-stress deformation data and plotted to determine the shear strength parameters. For test results, including sample density and moisture content, see Drawings No. B-3 through B-6*, Direct Shear Test Results,* and in the following table.

Table No. B-6, Direct Shear Test Results

Boring No./Street	Depth (feet)	Soil Description	Ultimate Strength Parameters	
			Friction Angle (degrees)	Cohesion (psf)
BH-01	7.5-9.0	Clayey Sand (SC)	29	330
BH-01	15.0-16.5	Clayey Sand (SC)	34	200
BH-02	7.5-9.0	Sandy Clay (CL)	29	30
BH-02	15.0-16.5	Sandy Clay (CL)	31	100

Sample Storage

Soil samples currently stored in our laboratory will be discarded thirty days after the date of the final report, unless this office receives a specific request to retain the samples for a longer period.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	BH-01	2.5-7.5	CLAYEY SAND (SC)					
⊠	BH-01	10.0-15.0	SANDY CLAY (CL)					
▲	BH-01	30.0-31.5	CLAYEY SAND (SC)					
★	BH-02	2.5-7.5	SANDY CLAY (CL)					
⊙	BH-02	10.0-15.0	SANDY CLAY (CL)					

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BH-01	2.5-7.5	19	0.3			4.0	50.4	45.6	
⊠	BH-01	10.0-15.0	9.5				1.0	33.6	65.4	
▲	BH-01	30.0-31.5	9.5	0.6			5.0	62.7	32.3	
★	BH-02	2.5-7.5	9.5				2.0	34.9	63.1	
⊙	BH-02	10.0-15.0	9.5	0.132			3.0	46.0	51.0	

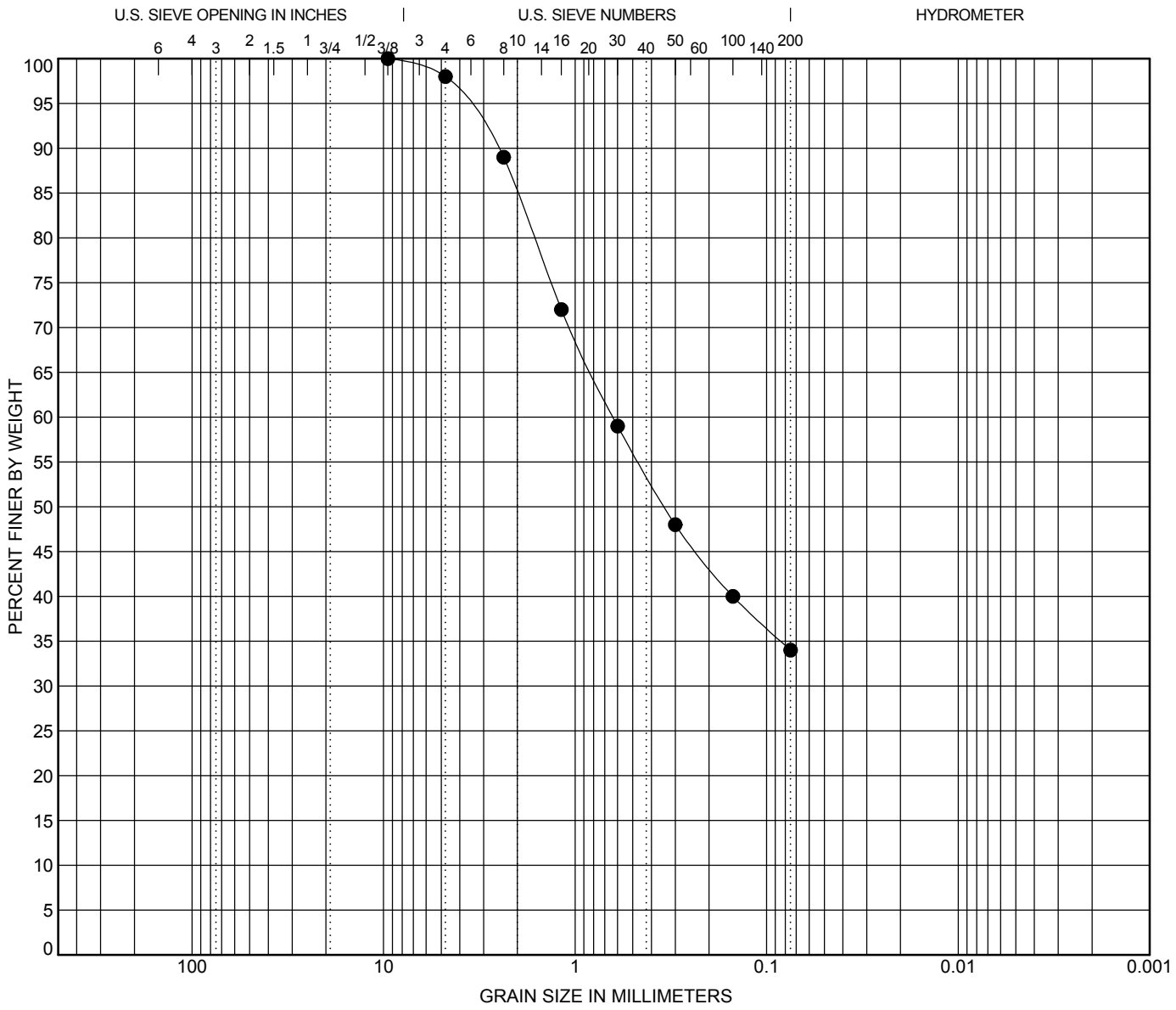
GRAIN SIZE DISTRIBUTION RESULTS

Converse Consultants

Indian Street Sewer Crossing
Approx. 1,100 LF of 15-inch Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA
Client: Carollo Engineers

Project No. **21-81-132-01**

Drawing No. **B-1a**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	**BH-02**	**25.0-26.5**	**CLAYEY SAND (SC)**					

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH-02**	**25.0-26.5**	**9.5**	**0.632**			**2.0**	**64.0**	**34.0**	

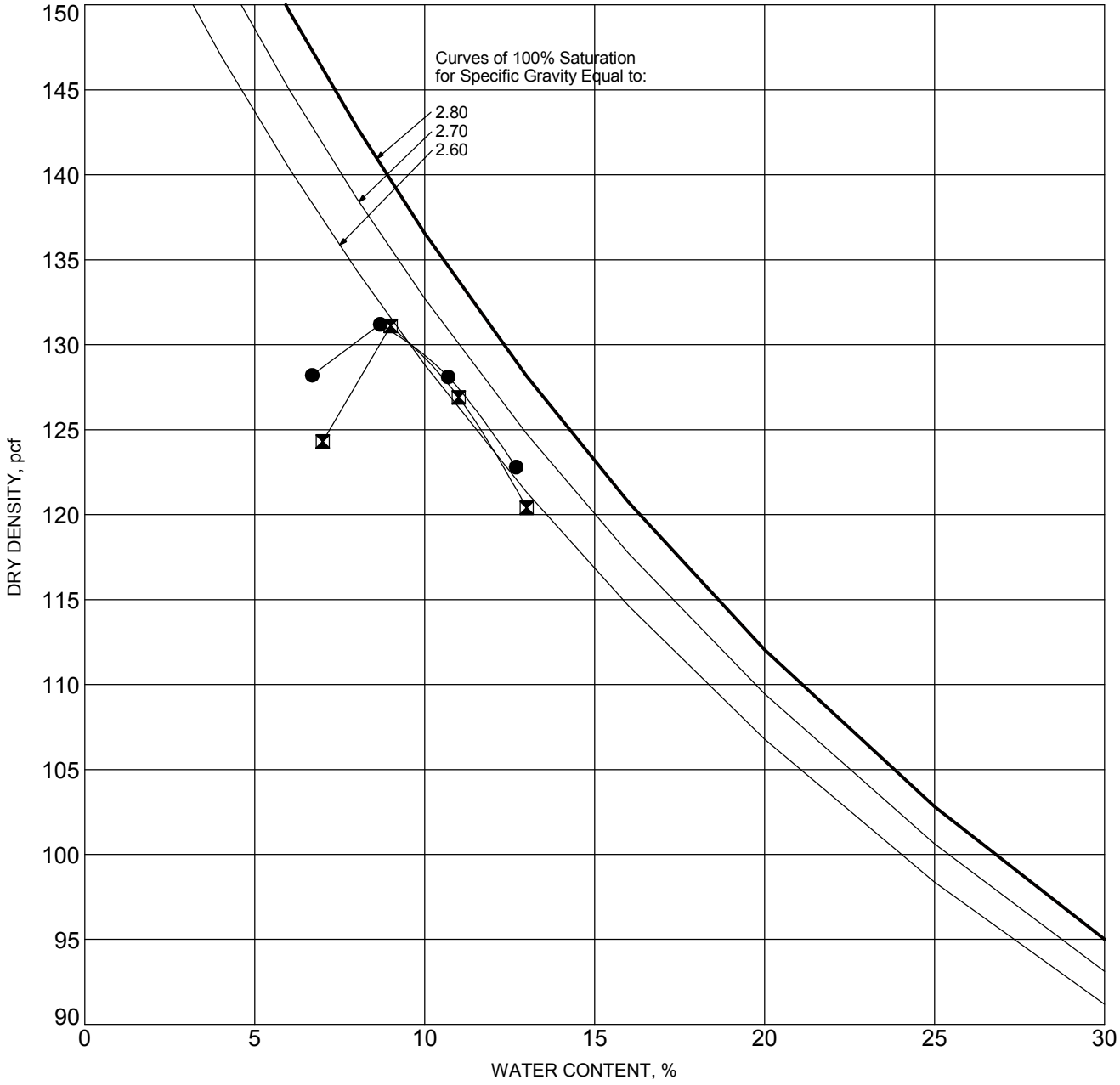
GRAIN SIZE DISTRIBUTION RESULTS

Converse Consultants

Indian Street Sewer Crossing
Approx. 1,100 LF of 15-inch Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA
Client: Carollo Engineers

Project No. **21-81-132-01**

Drawing No. **B-1b**



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	**BH-01**	**10.0-15.0**	**SANDY CLAY (CL), BROWN**	**D1557 Method B**	**9.0**	**131.5**
⊠	**BH-02**	**2.5-7.5**	**SANDY CLAY (CL), BROWN**	**D1557 Method B**	**9.3**	**131.5**

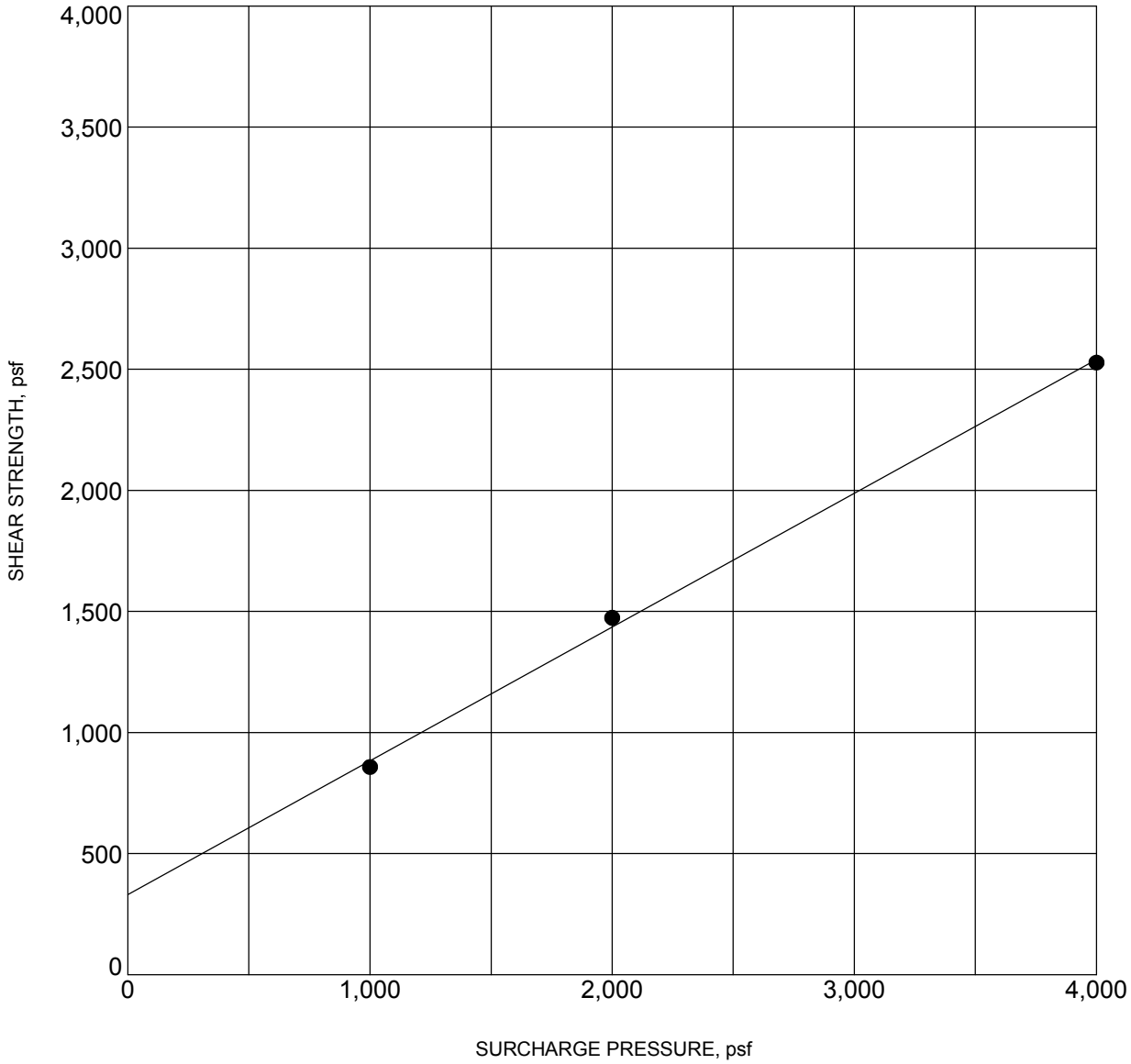
MOISTURE-DENSITY RELATIONSHIP RESULTS

Converse Consultants

Indian Street Sewer Crossing
Approx. 1,100 LF of 15-inch Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA
Client: Carollo Engineers

Project No. **21-81-132-01**

Drawing No. **B-2**



BORING NO.	:	**BH-01**	DEPTH (ft)	:	**7.5-9.0**
DESCRIPTION	:	**CLAYEY SAND (SC)**			
COHESION (psf)	:	**330**	FRICTION ANGLE (degrees):		**29**
MOISTURE CONTENT (%)	:	**11.0**	DRY DENSITY (pcf)	:	**117.7**

NOTE: Ultimate Strength.

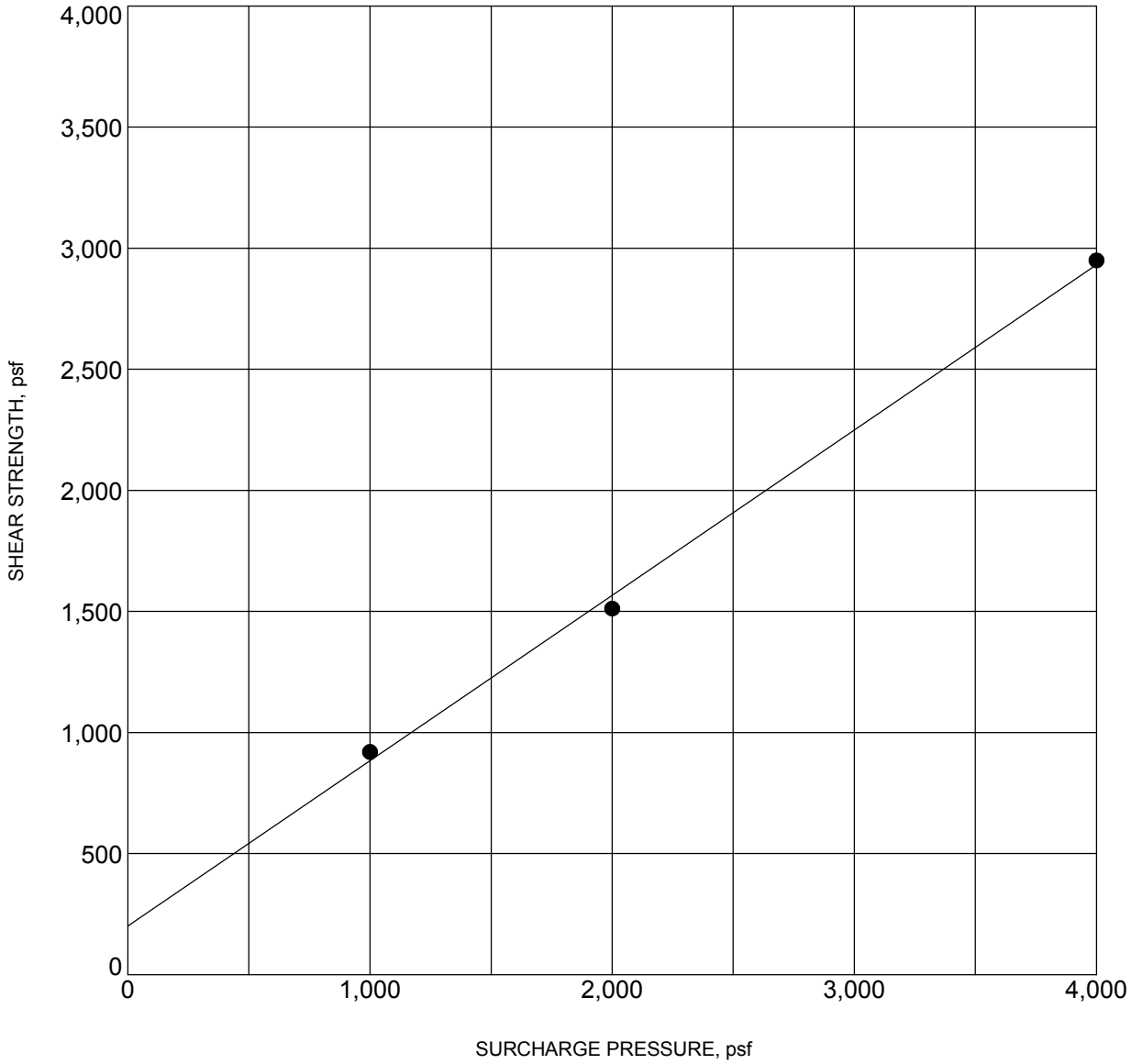
DIRECT SHEAR TEST RESULTS

Converse Consultants

Indian Street Sewer Crossing
Approx. 1,100 LF of 15-inch Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA
Client: Carollo Engineers

Project No. **21-81-132-01**

Drawing No. **B-3**



BORING NO.	:	**BH-01**	DEPTH (ft)	:	**15-16.5**
DESCRIPTION	:	**CLAYEY SAND (SC)**			
COHESION (psf)	:	**200**	FRICTION ANGLE (degrees):		**34**
MOISTURE CONTENT (%)	:	**11.0**	DRY DENSITY (pcf)	:	**130.2**

NOTE: Ultimate Strength.

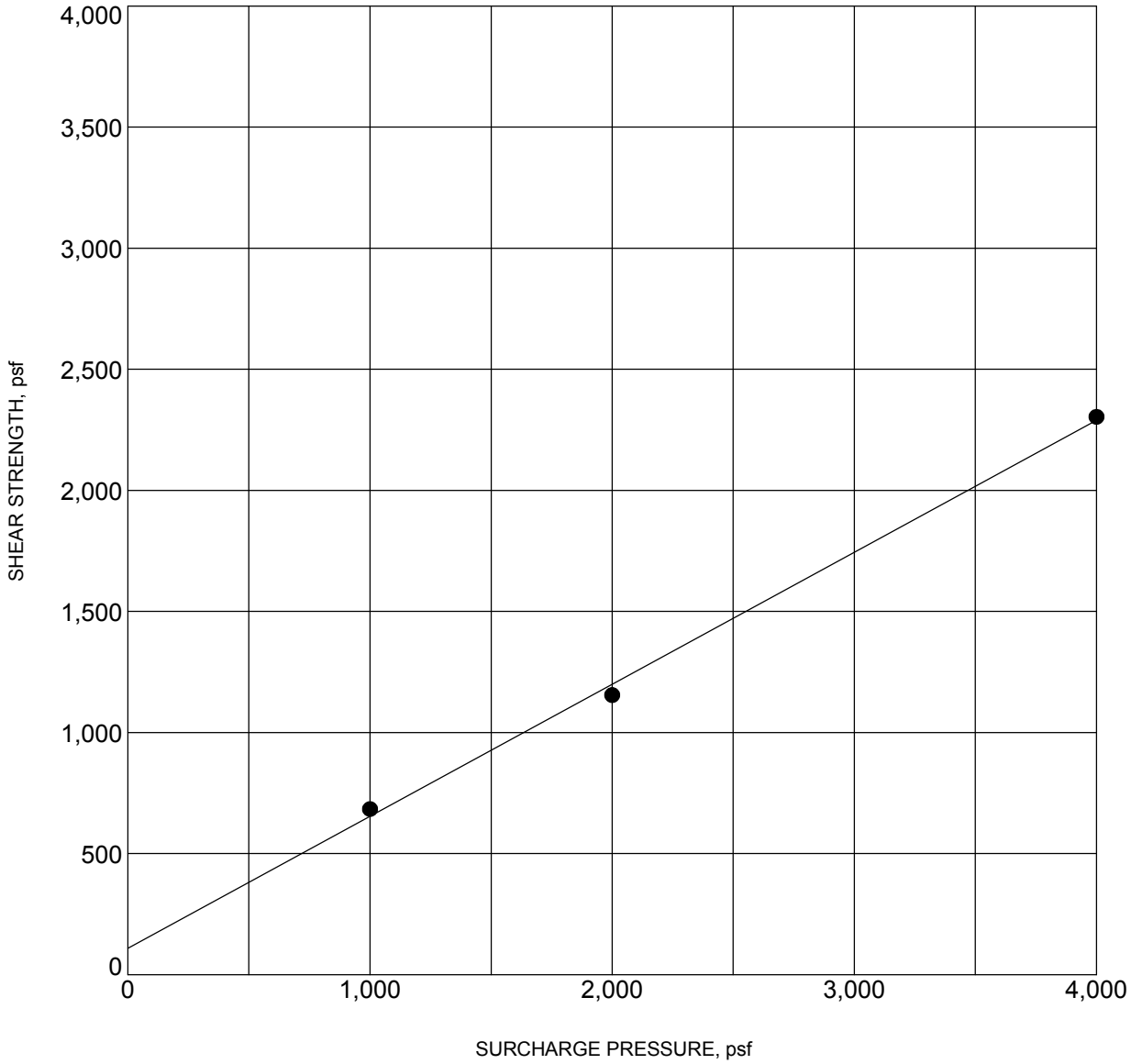
DIRECT SHEAR TEST RESULTS

Converse Consultants

Indian Street Sewer Crossing
Approx. 1,100 LF of 15-inch Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA
Client: Carollo Engineers

Project No. **21-81-132-01**

Drawing No. **B-4**



BORING NO.	:	**BH-02**	DEPTH (ft)	:	**7.5-9.0**
DESCRIPTION	:	**SANDY CLAY (CL)**			
COHESION (psf)	:	**110**	FRICTION ANGLE (degrees):		**29**
MOISTURE CONTENT (%)	:	**11.0**	DRY DENSITY (pcf)	:	**109.3**

NOTE: Ultimate Strength.

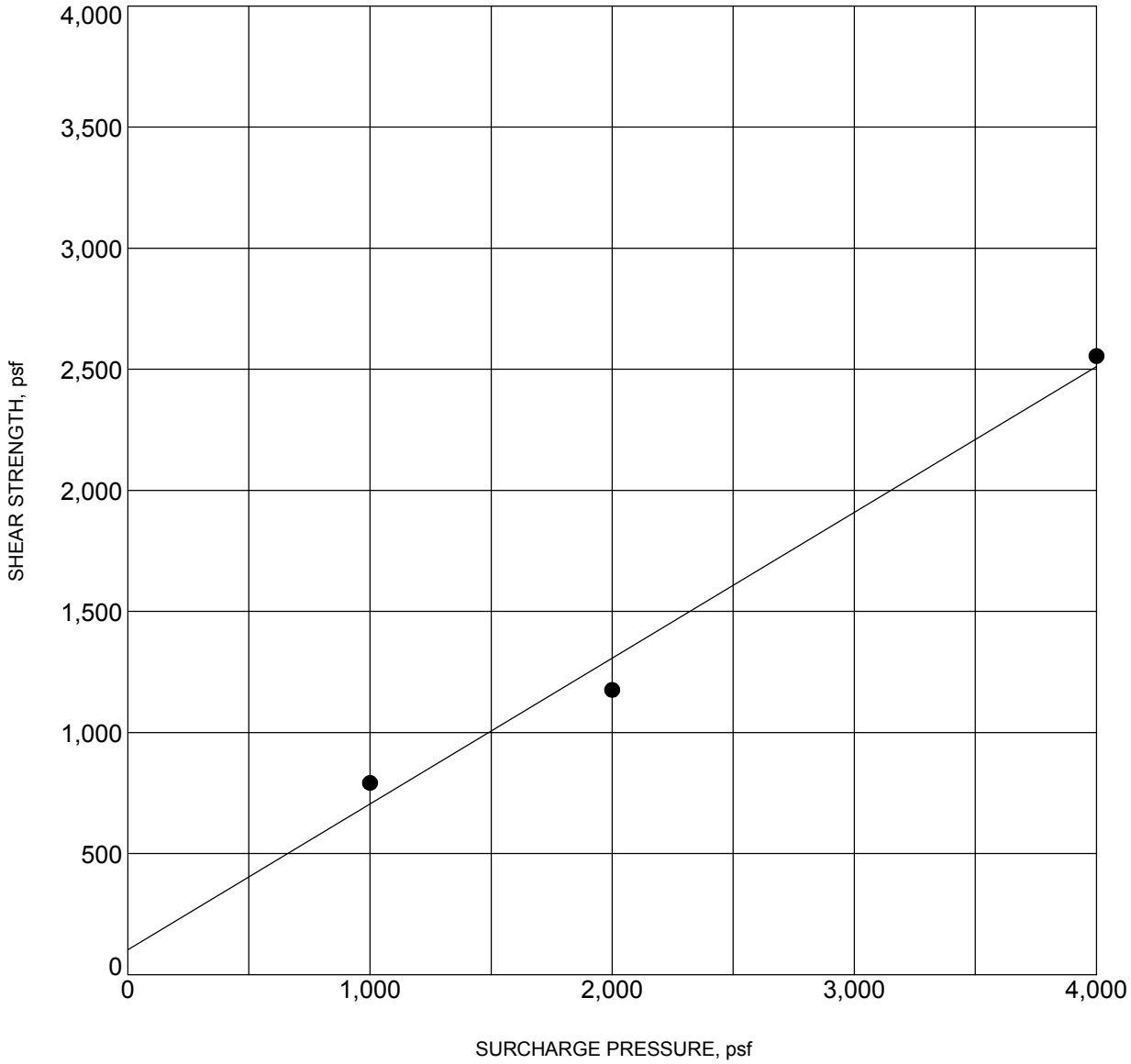
DIRECT SHEAR TEST RESULTS

Converse Consultants

Indian Street Sewer Crossing
Approx. 1,100 LF of 15-inch Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA
Client: Carollo Engineers

Project No. **21-81-132-01**

Drawing No. **B-5**



BORING NO.	:	**BH-02**	DEPTH (ft)	:	**15.0-16.5**
DESCRIPTION	:	**SANDY CLAY (CL)**			
COHESION (psf)	:	**100**	FRICTION ANGLE (degrees):		**31**
MOISTURE CONTENT (%)	:	**15.0**	DRY DENSITY (pcf)	:	**105.3**

NOTE: Ultimate Strength.

DIRECT SHEAR TEST RESULTS

Converse Consultants

Indian Street Sewer Crossing
Approx. 1,100 LF of 15-inch Dia. Gravity Sewer Pipeline
City of Moreno Valley, Riverside County, CA
Client: Carollo Engineers

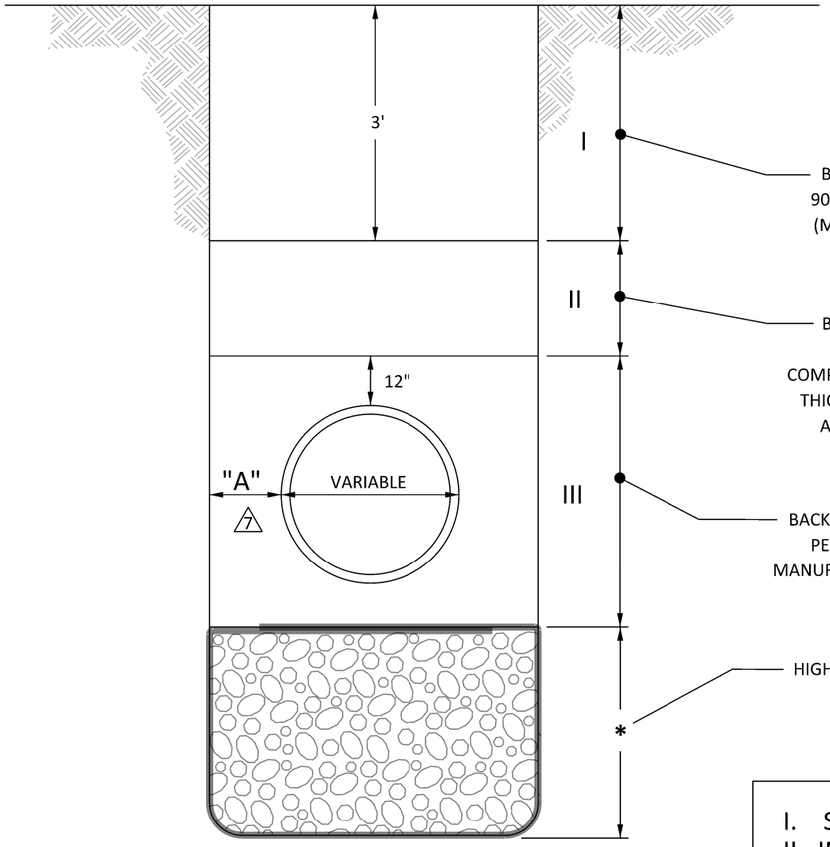
Project No. **21-81-132-01**

Drawing No. **B-6**

Appendix C

Trench Backfill and Pavement Repair

UNSURFACED MEDIANS, ROADSIDE STRIPS, OR EASEMENTS



BACKFILL COMPACTED TO 90% RELATIVE COMPACTION (MAXIMUM LIFT THICKNESS IS 6 INCHES).

6

BACKFILL COMPACTED TO 90% RELATIVE COMPACTION. MAXIMUM LIFT THICKNESS WHEN PONDING AND JETTING IS 2 FEET.

BACKFILL AND UTILITY BACKFILL PER UTILITY COMPANY OR MANUFACTURER'S SPECIFICATIONS.

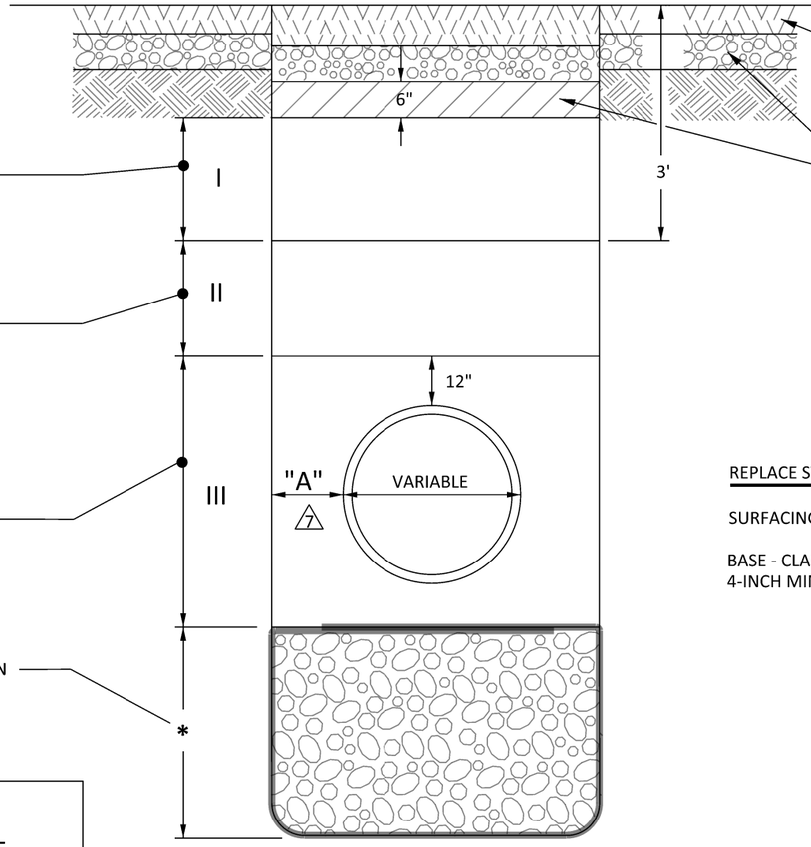
HIGH GROUND WATER CONDITION
SEE NOTE 2 7

I. STRUCTURAL ZONE
II. INTERMEDIATE ZONE
III. PIPE AND UTILITY ZONE

CLEARANCE "A"

1. PIPE SIZES THROUGH 12"- "A"=6"-9"
2. PIPE SIZES OVER 12"- "A"=1'-0" MIN.

UNSURFACED ROADWAYS, SURFACED STREETS OR SURFACED EASEMENTS



SURFACING (EXCLUDING GRAVEL ROADS)

BASE MATERIAL AND SUBGRADE, COMPACTED TO 95% RELATIVE COMPACTION.

REPLACE STRUCTURAL SECTION AS FOLLOWS:

SURFACING - EXISTING THICKNESS PLUS 1" (IN) OR 3" (IN) MINIMUM.

BASE - CLASS II, THICKNESS SHALL EQUAL EXISTING BASE MATERIAL, 4-INCH MINIMUM OR AS SPECIFIED.

NOTE:

1. WHEN A FIRM FOUNDATION IS NOT ENCOUNTERED, DUE TO SOFT, SPONGY, OR OTHER UNSUITABLE MATERIAL, SUCH MATERIAL SHALL BE REMOVED TO THE LIMITS DIRECTED BY THE ENGINEER, AND THE RESULTING EXCAVATION BACK FILLED WITH PIPE BEDDING MATERIAL COMPACTED TO 90% RELATIVE COMPACTION.

* 2. WHEN HIGH GROUND WATER CONDITION EXISTS, OVER EXCAVATE AND INSTALL ADDITIONAL BEDDING WITH MIRAFI 180N GEOTEXTILE FABRIC. OVER EXCAVATE MINIMUM OF 2-FEET, 2-INCH TO 3-INCH ROCK, 95% COMPACTED. GEOFABRIC WRAP WITH 12-INCH MINIMUM OVERLAP AT TOP PER SPECIFICATIONS. 7

REVISIONS					
NO.	DATE	INITIAL	DESCRIPTION	APP'D	DATE
7	7/17/19	GS	UPDATED TITLE BLOCK, LOGO, FONT, ADDED NOTE 2 AND BEDDING	AGA	7/17/19
6	9/25/03	CM	REVISED COMPACTION REQUIREMENT	VJB	10/15/03
5	7/9/98	KER	REVISED TO INCLUDE ALL PREVIOUS REVISIONS		

REFERENCES:

FILE I.D.: \kauai\eng\std dwgs\B-286B.dgn

SCALE: NONE

DRAWN BY: JJW

APPROVALS	INITIAL	DATE
DESIGN	JJW	12/29/94
CONSTRUCTION		
INSPECTION	JEW	12/30/94
OPERATIONS		
SUBMITTED	XXX	xx/xx/xx

RECOMMENDED Joseph D. Van Sickle 12/29/94
DIRECTOR OF ENGINEERING DATE

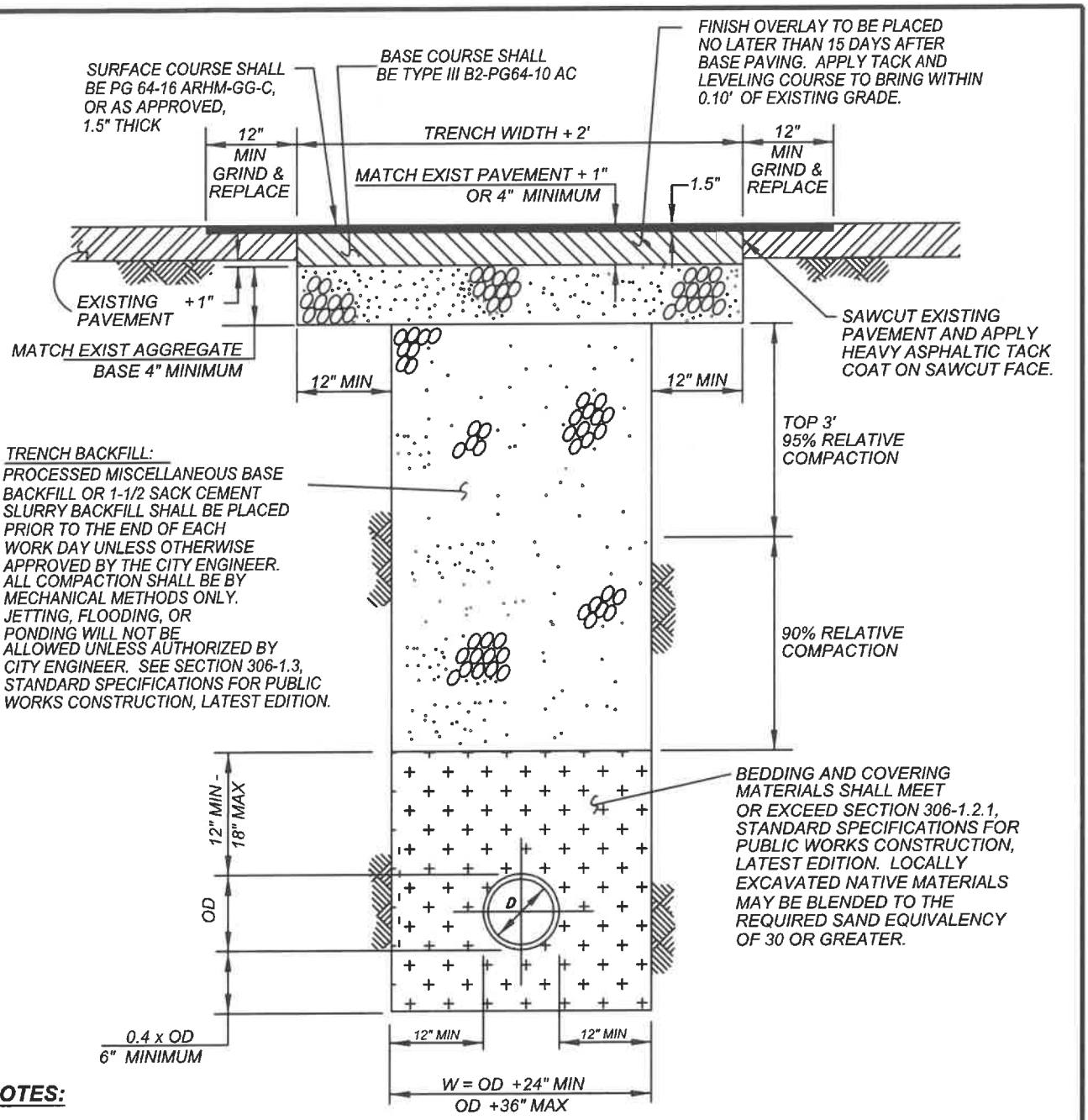
emwd EASTERN MUNICIPAL WATER DISTRICT

EASTERN MUNICIPAL WATER DISTRICT
STANDARD DRAWING

TRENCH BACKFILL

APPROVED G. Hoote Rugge 12/30/94
CHIEF ENGINEER DATE

B-286B 7



NOTES:

1.) SEE ADDITIONAL REQUIREMENTS, STD No MVSI-132C.

2.) ALL TRENCHES SHALL HAVE PROCESSED MISCELLANEOUS BASE BACKFILL OR 1-½ SACK CEMENT SLURRY BACKFILL UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

3.) ALL TRENCHING AND BACKFILL SHALL BE DONE IN ACCORDANCE WITH SECTION 306, STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.

4.) ALL TEMPORARY PAVING SHALL HAVE A MINIMUM 2" OF AC ON LOCAL STREETS AND 3" ON ALL OTHERS, UNLESS PERMANENT PAVEMENT IS PLACED IMMEDIATELY.

5.) NEW FINISH ARHM OVERLAY AT ENDS OF TRENCH SHALL BE EXTENDED TO FULL WIDTH OF EXISTING BIKE LANES OR NEAREST LANE LINE AS DIRECTED BY THE CITY ENGINEER.

NOT TO SCALE

RECOMMENDED: MDL 10/20/20
DIVISION MANAGER DATE

APPROVED: 10/22/20
PUBLIC WORKS DIRECTOR / CITY ENGINEER DATE

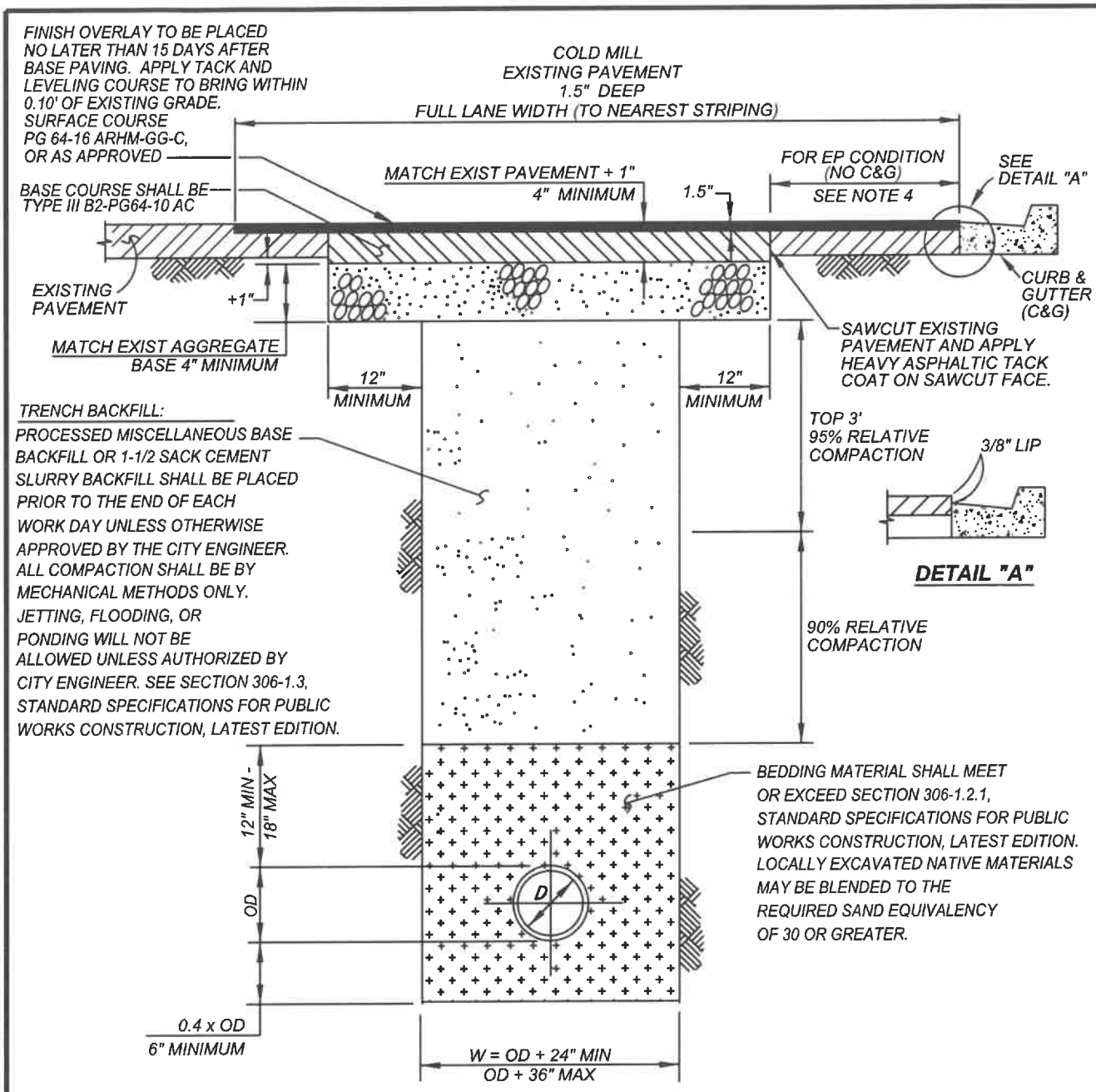
CITY OF MORENO VALLEY

PUBLIC WORKS DEPARTMENT - CAPITAL PROJECTS DIVISION

PERPENDICULAR TRENCH BACKFILL AND ROADWAY REPAIR

STANDARD PLAN
MVSI-132A-2

SHEET 1 OF 6



NOTES:

1.) SEE ADDITIONAL REQUIREMENTS, STD No MVSI-132C.
2.) ALL TRENCHING AND BACKFILL SHALL BE DONE IN ACCORDANCE WITH SECTION 306, STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.
3.) ALL TEMPORARY PAVING SHALL HAVE A MINIMUM 2" OF AC ON LOCAL STREETS AND 3" ON ALL OTHERS.
4.) FOR EDGE OF PAVEMENT (EP) CONDITION (NO CURB AND GUTTER), REMOVE AND REPLACE FULL DEPTH PAVEMENT (AB AND AC) REMNANTS UP TO 6'.

NOT TO SCALE

CITY OF MORENO VALLEY — DECEMBER 3, 1984

RECOMMENDED: DIVISION MANAGER — DATE 10/13/20

APPROVED: PUBLIC WORKS DIRECTOR / CITY ENGINEER — DATE 10/28/2020

CITY OF MORENO VALLEY

PUBLIC WORKS DEPARTMENT - CAPITAL PROJECTS DIVISION

PARALLEL TRENCH BACKFILL AND ROADWAY REPAIR

STANDARD PLAN
MVSI-132B-3

APPENDIX E

Noise Calculations

9878.6 Indian Street Sewer
Construction Equipment

Equipment	Max Noise Level at 50 Feet	Typical Duty Cycle	Average Noise Level at 50 Feet
Auger Drill Rig	84	20%	77
Backhoe	80	40%	76
Blasting	94	1%	74
Chain Saw	85	20%	78
Clam Shovel	93	20%	86
Compactor (ground)	80	20%	73
Compressor (air)	80	40%	76
Concrete Mixer Truck	85	40%	81
Concrete Pump	82	20%	75
Concrete Saw	90	20%	83
Crane (mobile or stationary)	81	16%	73
Dozer	85	40%	81
Dump Truck	84	5%	71
Excavator	85	40%	81
Front End Loader	80	40%	76
Generator (25 kilovolt amps or less)	70	50%	67
Generator (more than 25 kilovolt amps)	82	50%	79
Grader	85	40%	81
Hydra Break Ram	90	10%	80
Impact Pile Driver (diesel or drop)	95	20%	88
In situ Soil Sampling Rig	84	20%	77
Jackhammer	85	20%	78
Mounted Impact Hammer (hoe ram)	90	20%	83
Paver	85	50%	82
Pneumatic Tools	85	50%	82
Pumps	77	50%	74
Rock Drill	85	20%	78
Roller	74	40%	70
Scraper	85	40%	81
Tractor	84	40%	80
Vacuum Excavator (vac-truck)	85	40%	81
Vibratory Concrete Mixer	80	20%	73
Vibratory Pile Driver	95	20%	88

9878.6 Indian Street Sewer
Daytime Construction

Phase	Equipment		Maximum Average Hourly Noise Level at 50 Feet [dB(A) L_{eq}]	Phase Duration (months)	Average Distance to Receiver (feet)	Average Noise Level at Receiver [dB(A) L_{eq}]
Grubbing/	Concrete Saw		83			
Land Clearing	Dump Truck		71	0.8	130	75
		Total	**83**			
Grading/	Excavator		81			
Excavation	Front End Loader		76	3.6	130	74
		Total	**82**			
Drainage/	Excavator		81			
Utilities/	Utility Truck		74	2.4	130	74
Subgrade		**Total**	**82**			
Paving	Paver		82			
	Utility Truck		65	1.2	130	74
		Total	**82**			

9878.6 Indian Street Sewer
Nighttime Construction

Phase	Equipment	Maximum Average Hourly Noise Level at 50 Feet [dB(A) L_{eq}]	Average Distance to Receiver (feet)	Average Noise Level at Receiver without Barrier [dB(A) L_{eq}]	Average Noise Level at Receiver with Barrier [dB(A) L_{eq}]
Nighttime	Excavator	81			
	Front End Loader	76	190	71	54
	Total	**82**			

Reference Noise Level		82.2
Reference Distance		50
Site Conditions	Hard	

Distance from Barrier to Source	Distance from Barrier to Receiver	Distance from Source to Receiver	Height of Source	Height of Wall	Height of Receiver	Hm	Hn	delta	fresnel @ 500 Hz	Noise Level Reduction	Unabated Noise Level	Resultant Noise Level
20	170	190	6	15	5	-0.11	-0.89	2.223	2.046	16.10	71	54.50