

# STATE ROUTE 74 MULTI ASSET PROJECT



## Paleontological Identification Report/Paleontological Evaluation Report

City of San Juan Capistrano, County of Orange

12-ORA-74; PM 0.00/11.40

EA 0R990; EFIS 12190000072

**August 2025**



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STATE OF CALIFORNIA  
Department of Transportation

Prepared By: \_\_\_\_\_

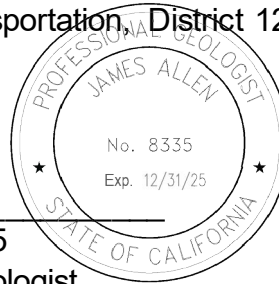


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## Table of Contents

|                                                                |    |
|----------------------------------------------------------------|----|
| Executive Summary .....                                        | i  |
| Chapter 1 Project Description and Setting .....                | 1  |
| 1.1 Introduction 1                                             |    |
| 1.1.1 Caltrans Policy .....                                    | 1  |
| 1.2 Definition and Significance of Paleontological Resources 1 |    |
| 1.2.1 Scientific Significance .....                            | 2  |
| 1.2.2 Paleontological Resource Assessment Criteria .....       | 2  |
| 1.3 Project Location and Description 3                         |    |
| 1.3.1 Build Alternative .....                                  | 5  |
| 1.3.1 No Build Alternative .....                               | 7  |
| 1.4 Regulatory Setting 7                                       |    |
| 1.4.1 Federal Laws & Regulations .....                         | 7  |
| 1.4.2 State Laws & Regulations .....                           | 9  |
| 1.4.3 Local Regulatory Setting .....                           | 10 |
| 1.5 Geologic Setting 12                                        |    |
| 1.5.1 Regional Geologic Setting .....                          | 12 |
| 1.5.2 Local Geologic Setting (Project Area) .....              | 12 |
| 1.5.3 Cross Sections and Topographic Overviews .....           | 20 |
| Chapter 2 Paleontological Resource Identification .....        | 21 |
| 2.1 Fossil Locality Search 21                                  |    |
| 2.1.1 Methods .....                                            | 21 |
| 2.1.2 Results .....                                            | 21 |
| 2.2 Literature Review 25                                       |    |
| 2.2.1 Additional Literature Review Methods .....               | 25 |
| 2.2.2 Results .....                                            | 25 |
| 2.3 Paleontological Field Survey 26                            |    |
| 2.3.1 Methods .....                                            | 26 |
| 2.3.2 Results .....                                            | 26 |
| Chapter 3 Paleontological Resources Impact & Evaluation .....  | 31 |
| 3.1 Paleontological Potential of the Proposed Project 31       |    |
| 3.2 Paleontological Resource Impact Analysis 34                |    |
| 3.2.1 Proposed Project Paleontological Potential .....         | 35 |

|                                            |    |
|--------------------------------------------|----|
| 3.2.2 Environmental Consequences .....     | 38 |
| 3.3 Data Gaps 39                           |    |
| Chapter 4 Recommendations .....            | 40 |
| 4.1 Required Actions 40                    |    |
| 4.1.1 Standard Specification 14-7.03 ..... | 40 |
| 4.1.2 Limitations .....                    | 40 |
| 4.2 Resource Agency Coordination 41        |    |
| 4.2.1 Required Contacts .....              | 41 |
| 4.2.2 Permits and Land Access .....        | 41 |
| Reference .....                            | 42 |

## List of Figures

|                                                                                            |    |
|--------------------------------------------------------------------------------------------|----|
| Figure 1: Project Location Map .....                                                       | 9  |
| Figure 2a: Geologic Map of the Project Area .....                                          | 23 |
| Figure 2b: Geologic Map of the Project Area .....                                          | 24 |
| Figure 3: Paleontological Potential Map of the Project Area .....                          | 33 |
| Figure 4. Proposed drainage location #1 along WB SR 74, PM 3.6 .....                       | 31 |
| Figure 5. Proposed drainage location #2 along EB SR 74 ROW, PM 4.2/4.3 .....               | 32 |
| Figure 6. Proposed drainage location #1 along slope of EB SR 74, PM 5.2/5.3 .....          | 32 |
| Figure 7. Proposed drainage location #1 along (~100 ft. east) EB SR 74 ROW .....           | 33 |
| Figure 8. Proposed drainage location #2 Tss Deposits (~100 ft. east) along EB SR 74 ROW .. | 33 |
| Figure 9. Proposed drainage location #1 Qy/s deposits EB SR 74, PM 3.6 .....               | 34 |
| Figure 10. Tss Deposits, pavement rehabilitation work along WB SR 74 ROW .....             | 34 |
| Figure 11. Williams Formation-Pleasant Mbr. (Kss) deposits EB SR 74, PM 6.9/7.0 .....      | 35 |
| Figure 12. Tss Deposits, adjacent to proposed EB SR-74 pavement marking ROW .....          | 35 |
| Figure 13. Paleontological Potential Map of the Project Area .....                         | 38 |
| Figure 14. Drainage Location 1, PM 3.6/3.58. ....                                          | 41 |
| Figure 15. Drainage Location 2, PM 4.2/4.3 .....                                           | 41 |
| Figure 16. Drainage Location 3, PM 4.2/4.3 .....                                           | 42 |

## List of Tables

|                                                                                          |                                     |
|------------------------------------------------------------------------------------------|-------------------------------------|
| Table 1-3a. Project Area and 1-Mile Radius USGS 7.5 minute Quadrangle .....              | 8                                   |
| Table 1-3b. Project Objectives (from PIR 2023) .....                                     | <b>Error! Bookmark not defined.</b> |
| Table 1-5. Geologic Units Within the Project Area .....                                  | 13                                  |
| Table 4-1a. NHMLA, Locality Search Results (July 2025) .....                             | 27                                  |
| Table 4-1b. SDNHM Locality Search Results (July 2025) .....                              | 29                                  |
| Table 2-2a. PBDM Fossil Resources within Project Area (April 2025) .....                 | 30                                  |
| Table 2-2b. OC Parks Fossil Resources within Project Area (April 2025) .....             | 30                                  |
| Table 3-1: Paleontological Sensitivity .....                                             | 36                                  |
| Table 3-2. Proposed Ground Disturbance (Excavation) for Project Elements .....           | 39                                  |
| Table 3-3. Drainage Locations and Scopes of Work (Draft Project Report, July 2025) ..... | 42                                  |

## **APPENDICES**

APPENDIX A – Maps

APPENDIX B – Preparer's Qualifications

APPENDIX C – Fossil Locality Search Results

APPENDIX D – Field Survey Forms

APPENDIX E – Preliminary Project Plans & Cross Section

APPENDIX F – Topographic Maps

## **Acronym List for Paleontological Identification Report/ Paleontological Evaluation Report Template**

BLM- Bureau of Land Management  
B.P.- Before Present  
Caltrans - California Department of Transportation  
CIPP- Cure-In-Place-Pipe  
CEQA- California Environmental Quality Act  
CFR - Code of Federal Regulations  
CGS - California Geological Survey  
CCO - Construction Change Order  
ESA - Environmentally Sensitive Area  
FHWA - Federal Highway Administration  
FLPMA - Federal Land Policy and Management Act  
GIS- Geographical Information System  
Ka - Kilo-annum (thousand years ago)  
Ma - Mega-annum (million years ago)  
NHPA - National Historic Preservation Act  
NEPA – National environmental Quality Act of 1970  
NNL- National Natural Landmark  
NPS - National Park Service  
PER – Paleontological Evaluation Report  
PIR – Paleontological Impact Report  
PM - postmile  
PRC - Public Resources Code  
PRPA - Paleontological Resources Preservation Act  
PFYC- Potential Fossil Yield Classification  
SER - Standard Environmental Reference  
SVP - Society of Vertebrate Paleontology  
USC - United States Code  
USFS - United States Forest Service  
USGS - United States Geological Survey

## Executive Summary

The purpose of this Paleontological Identification Report/Paleontological Evaluation Report (PIR/PER) is to provide technical information and to review the proposed project in sufficient detail to determine to what extent the proposed project potentially may affect paleontological resources. The California Department of Transportation (Caltrans) has prepared this PIR/PER under its responsibilities pursuant to the California Environmental Quality Act and its assumption of responsibility under the National Environmental Policy Act.

The California Department of Transportation (Caltrans), proposes the SR-74 Multi-Asset Project between I-5 (PM 0.0) in the city of San Juan Capistrano, to one-mile east of San Juan Creek (PM 11.5) within unincorporated County of Orange jurisdiction. The purpose is to address a range of improvements, including roadway, TMS, traffic safety devices, and complete street elements. All work is proposed within the State Right of Way (ROW). The project is state and federally funded and subject to CEQA and NEPA. As proposed in the June 2023 Project Initiation Report (PIR), this multi-asset project proposes two alternatives (Build and No Build), detailed in Chapter 1.3 *Project Description* of this PIR-PER. In general, The Build Alternative includes the following scope of work:

- *Pavement rehabilitation*: RHMA-G type cold plane and overlaying existing asphalt concrete
- *Drainage Improvement*: Cure-In-Place-Pipe (CIPP) liner replacement
- *Traffic Census Station (TMS) Improvement*: Upgrade the existing Traffic Census Station
- *Traffic Device Improvement*: Metal Guardrail Systems (MGS)
- *Traffic Device Improvement*: Curve warning signs (CWS)
- *Complete Street Improvement*: Ladder crosswalks
- *Complete Street Improvement*: Add 2-feet buffer
- *Complete Street Improvement*: Add class II bike lane pavement marking (symbols)

The geologic units that occur in the Project area were evaluated using the Caltrans tripartite scale (Caltrans, 2016), which comprises three rankings: High Potential, Low Potential, and No Potential. These units were determined to have High to Low paleontological sensitivity according to Caltrans Standard Environmental Reference (SER), Volume 1, Chapter 8 Paleontology (Caltrans 2014). A total of up to 20 paleontological resources were identified in the 1-Mile radius of the Project Area within surface or near surface deposits; of these, none are within the immediate Construction footprint areas. Additionally, low to high Paleontologically sensitive units make up a majority of the Project Area, with fossil localities found primarily to the north, south and southwest within the Capistrano and Santiago Formations between the intersections of the Interstate 5 (I-5)/SR-73 and SR-73/La Pata Avenue. [PM 0.00/R2.65]

Paleontological Impact and Evaluation section (as outlined in Chapter 3) concluded that while portions of the project area may overlap/intersect geologically mapped areas of high sensitivity, the construction footprint and methods proposed do not have the potential to impact significant fossil resources. Additionally, one location (Drainage Location 3: PM 4.2/4.3) proposed for Drainage Improvements, is within the Santiago Formation- a known high sensitivity unit- however as a result of the field survey, and proposed construction methods (CIPP), this work also, will have little to no potential to impact any significant paleontological resources. The project recommendation is therefore to implement the Standard Specification for Paleontological Resources (14-7.03/04) in accordance with the Caltrans *Standard Specifications and Provisions 2024*.

This document adheres to the guidelines for Paleontological Resources as outlined in the Caltrans *Environmental Reference, Volume 1, Chapter 8 – Paleontology*. This report includes information used to determine the potential to encounter scientifically significant fossil remains in the geologic units found in the Project area and to recommend paleontological standards and specifications efforts based on the project activities involved in development and the potential to encounter scientifically significant fossil remains in those geologic units. It is not, and should not be used as, a geological assessment.

## Chapter 1 Project Description and Setting

### 1.1 Introduction

The purpose of this Paleontological Identification Report/Paleontological Evaluation Report is to provide technical information and to review the proposed project in sufficient detail to determine to what extent the proposed project potentially may affect paleontological resources. Paleontological resources, or fossils, are afforded protection by environmental legislation set forth under the California Environmental Quality Act and the National Environmental Policy Act.

#### Project Purpose and Need

**Purpose:** The primary purpose of this multi-assets project is to improve ride quality, reduce recurrent maintenance activities, enhance road safety, and provide safe transportation facilities to the commuters.

**Need:** This segment of Rte-74, PM 0.0/11.5, has experienced inadequate roadway conditions and has been operating with incomplete and disconnected transportation management systems.

#### 1.1.1 Caltrans Policy

Caltrans and local project sponsors, as part of the project delivery process, are obligated to conduct paleontological studies in response to federal and state laws and regulations. Local project sponsors must comply with local laws and ordinances. Caltrans complies with local laws and ordinances when practicable but is not obligated to do so. If rock units with a high paleontological potential ranking may be impacted by a project, avoidance, minimization, and/or mitigation measures must be considered.

### 1.2 Definition and Significance of Paleontological Resources

Paleontological resources are the remains or traces of once-living organisms that are preserved in the geologic record as fossils. Paleontological resources can include body fossils (e.g., bones, teeth, shells, leaves), trace fossils (e.g., tracks, trails, burrows, coprolites), and microfossils (e.g., pollen grains, spores, diatoms). Fossils are generally considered to be older than about 11,700 years (the end of the Pleistocene Epoch), but organic remains older than middle Holocene age (about 5,000 years) can also be considered to represent fossils because they are part of the record of past life. Paleontological resources also include fossil localities and the formation or rock unit containing fossils or with the potential to contain fossils.

Fossils are considered important scientific and educational resources because they serve as direct and indirect evidence of past life and are used to understand the history of life on Earth, and of past environments, ecosystems, and climates. Fossils can answer questions relating to patterns and processes of evolution and extinction, and how life has responded to changes in climates and environments through time.

### **1.2.1 Scientific Significance**

Fossils vary in their preservation, abundance, and distribution. Therefore, not all fossils are considered scientifically significant. Scientifically significant paleontological resources are fossils and fossiliferous deposits consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information.

### **1.2.2 Paleontological Resource Assessment Criteria**

Evaluating the potential effects to paleontological resources involves assigning paleontological potential rankings to individual geologic units based on the potential for the unit to contain scientifically significant fossils. The ranking systems are based on both the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils, and the sensitivity of these fossils to adverse impacts.

Caltrans uses a tripartite scale for assessing paleontological potential. This scale consists of high potential, low potential, and no potential.

*High Potential* - Rock units which, based on previous studies, contain or are likely to contain significant vertebrate, significant invertebrate, or significant plant fossils. These units include, but are not limited to, sedimentary formations that contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. These units may also include some volcanic and low-grade metamorphic rock units. Fossiliferous deposits with extremely limited geographic extent or an uncommon origin (e.g., tar pits and caves) are given special consideration and ranked as highly sensitive. High sensitivity includes the potential for containing: 1) abundant vertebrate fossils; 2) a few significant fossils (large or small vertebrate, invertebrate, or plant fossils) that may provide new and significant taxonomic, phylogenetic, ecologic, and/or stratigraphic data; 3) areas that may contain datable organic remains older than Recent, including *Neotoma* (sp.) middens; or 4) areas that may contain unique new vertebrate deposits, traces, and/or trackways. Areas with a high potential for containing significant paleontological resources require monitoring and mitigation.

**Low Potential** - This category includes sedimentary rock units that: 1) are potentially fossiliferous but have not yielded significant fossils in the past; 2) have not yet yielded fossils but possess a potential for containing fossil remains; or 3) contain common and/or widespread invertebrate fossils if the taxonomy, phylogeny, and ecology of the species contained in the rock are well understood. Sedimentary rocks expected to contain vertebrate fossils are not placed in this category because vertebrates are generally rare and found in more localized stratum. Rock units designated as low potential generally do not require monitoring and mitigation. However, as excavation for construction gets underway it is possible that new and unanticipated paleontological resources might be encountered. If this occurs, a Construction Change Order (CCO) must be prepared in order to have a qualified Principal Paleontologist evaluate the resource. If the resource is determined to be significant, monitoring and mitigation is required.

**No Potential** - Rock units of intrusive igneous origin, most extrusive igneous rocks, and moderately to highly metamorphosed rocks are classified as having no potential for containing significant paleontological resources. For projects encountering only these types of rock units, paleontological resources can generally be eliminated as a concern when the Preliminary Environmental Analysis Report is prepared and no further action taken.

### 1.3 Project Location and Description

**Project Location.** The project is located along SR-74 between I-5 (PM 0.0) in the city of San Juan Capistrano, to one-mile east of San Juan Creek (PM 11.5) within unincorporated County of Orange jurisdiction, all within the state ROW (Figure 1). The Project area includes mixed-use developments of commercial and residential properties along the western segments of SR-74, and undeveloped parcels that bound recreational parks (County of Orange and Private) and forestry lands (USFS) in the eastern segments.

The project falls under the USGS 7.5-minute topographic quadrangles: *San Juan Capistrano* and *Canada Gobernadora* as depicted in Table 1 below. Additionally, the 1-mile radius includes *Dana Point* and *San Clemente* quadrangles, however these quadrangles were not analyzed as no proposed work will potentially impact those areas.

Table 1-3a. Project Area and 1-Mile Radius USGS 7.5-minute Quadrangles

| <b>Quadrangle</b>          | <b>Township, Range, Section</b> | <b>State Route</b> | <b>Post Mile Limits</b> |
|----------------------------|---------------------------------|--------------------|-------------------------|
| <i>San Juan Capistrano</i> | T8S, R8W, S12                   | 74                 | 0.0/R2. 3               |
| <i>Canada Gobernadora</i>  | T8S, R7W, S 00, 06, 07          | 74                 | R2.3/14.4               |

\* San Bernardino Base Median

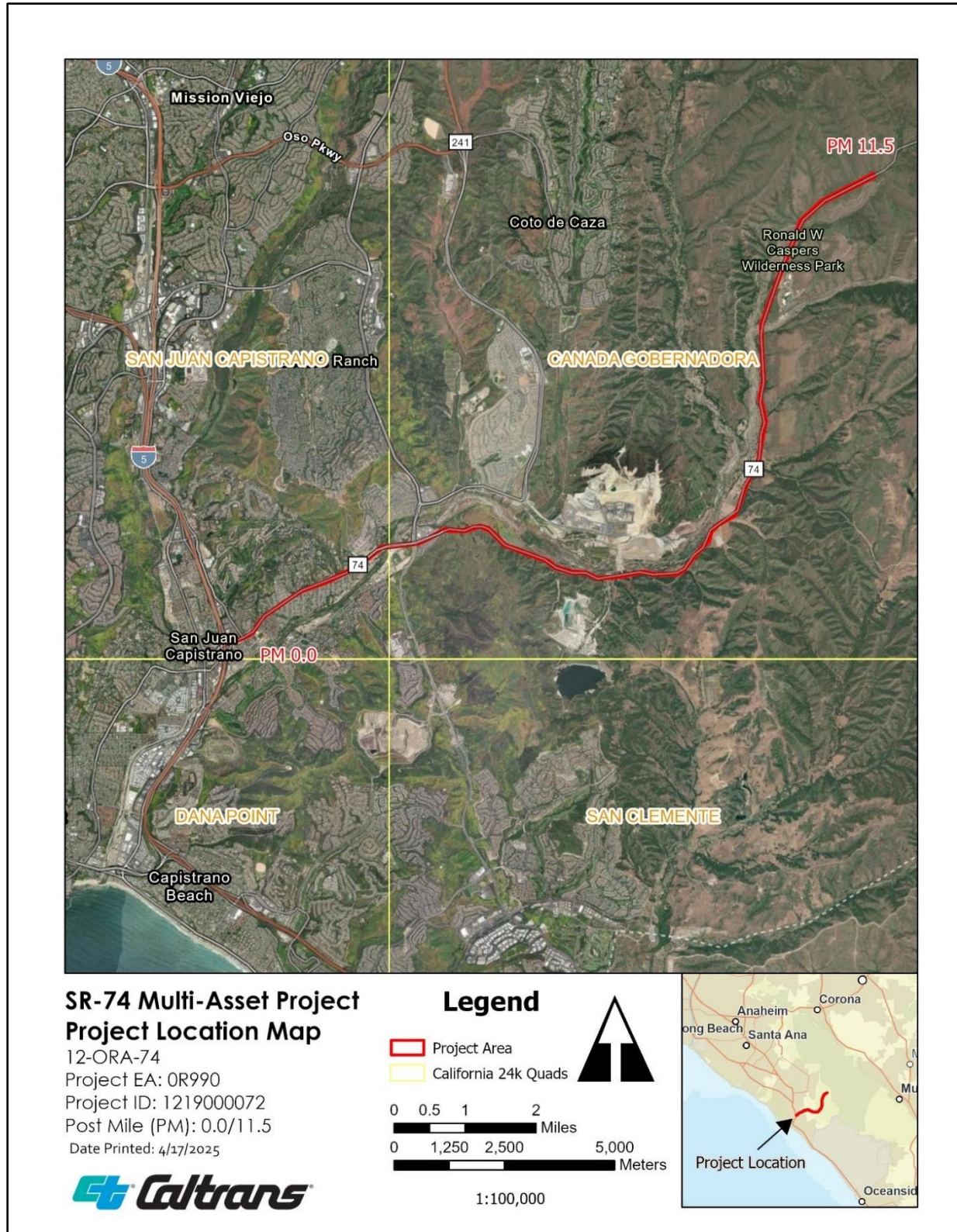


Figure 1: Project Location Map

**Project Description.** The California Department of Transportation (Caltrans), proposes the SR-74 Multi-Asset Project between I-5 (PM 0.0) in the city of San Juan Capistrano, to one-mile east of San Juan Creek (PM 11.5) within unincorporated County of Orange jurisdiction. The current SR-74 multi-assets PIR, EA 0R990K, was initiated under D12 Asset Management Program, under the 2024 SHOPP and anticipated delivery in FY 2026/2027. The PIR includes six (6) asset classes, emphasizing roadway, safety devices, and complete street improvements. All proposed work is within the state right of way and the acquisition of fee, permanent easements, or temporary construction easements are not needed. The total Disturbed Soil Area (DSA) will be 0.09 acres; approximately 4092 sq ft. calculated by accounting area of upgrading the MGS, curve warning signs, and replacing existing culverts.

As proposed in the June 2023 Project Initiation Report (PIR), this multi-asset project proposes two alternatives (Build and No Build). In general, the Project includes the following 6 asset classes and performance objectives in the table below:

Table 1-3b. Project Objectives (from PIR 2023).

|     | Activity Detail                   | Performance Objective              | Performance Measure          |
|-----|-----------------------------------|------------------------------------|------------------------------|
| 1   | Asphalt Pavement Minor Rehab      | Pavement Rehabilitation (Class II) | 22.980 Lane-Miles            |
| 2.1 | Replace/Install Culverts          | Drainage Restoration               | 261.57 Feet<br>(5 Locations) |
| 2.2 | Cure in Place Line (CIPL) Culvert | Drainage Restoration               | 168 Feet<br>(3 Locations)    |
| 3   | Crosswalks/Ladder/Buffer          | Complete Street Improvements       | 7 Locations                  |
| 4   | Curve Warning Signs (CWS)         | Traffic Safety Improvements        | 24 Each                      |
| 5   | Midwest Guardrail System (MGS)    | Traffic Safety Devices             | 600 Feet                     |

### 1.3.1. BUILD ALTERNATIVE

**Build Alternative (Programmable Project Alternative):** The Build Alternative satisfies the needs and purposes of the project and is recommended to be the programmable project alternative. The build alternative proposes Roadway (A), Traffic Safety Device (B) and Complete Street (C) Improvements described in the sections below.

#### A. ROADWAY IMPROVEMENTS

The primary purpose of the roadway improvements is to improve ride quality, achieve an efficient management of traffic movement, enhance a smooth traffic flow, reduce travel time, reduce recurrent maintenance activities, and provide safe transportation facilities to the commuters. Roadway improvements are proposed as follows:

***Pavement Rehabilitation:*** Pavement rehabilitation is the anchor asset proposed by D12 Maintenance Engineering. It is proposed to improve the existing pavement on SR-74, from SR-74/I-5 Separation (PM 0.0) to 1.0-mile east of San Juan Creek (PM 11.5), excluding the segments at PM 1.0/1.9 which are included in project 08692. The proposed pavement work includes cold planning and overlaying existing asphalt concrete on general purpose (GP) lanes and shoulders. The proposed pavement is 0.2 feet of the Rubberized Hot Mix Asphalt-Type G (RHMA-G).

Additional works to accommodate the proposed pavement rehabilitation include upgrading and restoring existing loop detectors within the pavement improvement limits and upgrading existing pavement delineation in accordance with Caltrans Standard Plans and specifications.

***Drainage Rehabilitation:*** Drainage Improvement is the satellite asset proposed by D12 Maintenance Engineering Branch. The proposal calls for a restoration of 168 feet of 3 existing pipe segments on SR- 74, at various locations throughout the project limits, PM 0.0/11.5. The proposal includes performing cure in place pipe (CIPP) liner and flared end sections (FES). All work will be performed within state right-of-way.

***Curve Warning Signs (CWS):*** Adding curve warning signs is a satellite asset proposed by D12 Traffic Operations. The proposal calls for adding of 54 curve warning signs on SR-74, at 27 locations between PM 5.41/8.18. All work will be performed within state right-of-way.

## **B. TRAFFIC SAFETY DEVICE IMPROVEMENTS:**

The primary purpose of upgrading traffic safety devices is to enhance safe transportation facilities to the commuters. Traffic safety devices improvements are proposed as follows:

***Metal Beam Guardrail System (MBGS):*** Upgrading the existing MBGS is a satellite asset proposed by D12 Traffic Operations. The proposal calls for upgrading 2 existing MBGS on SR-74, at PM 10.4.

## **C. COMPLETE STREET IMPROVEMENTS:**

The primary purpose of upgrading complete street elements is to enhance safe transportation facilities to the commuters including pedestrian and bike riders. Various complete street improvements are proposed as follows:

***Upgrading Ladder Crosswalks:*** Upgrading ladder crosswalks is a satellite asset proposed by D12 Traffic Operations and System Planning. The proposal calls for upgrading ladder crosswalks for a total surface length of 1,803 ft. at 5 locations on SR-74 between PM 0.0/3.0. All work will be performed within state right-of-way.

**Adding 2-Foot Buffer:** Adding 2-foot buffers is a satellite asset proposed by D12 Traffic Operations and System Planning. The proposal calls for adding 2-foot buffer between the existing GP lane and the class II bike lane, PM 1.9/2.8. The existing 8-foot shoulder on both directions will be restriped. All work will be performed within state right-of-way.

**Adding Class II Bike Lane Pavement Markings (symbols):** Adding class II bike lane symbols is a satellite asset proposed by D12 Traffic Operations and System Planning. The proposal calls for adding class II bike lane symbols in every 500-feet in both directions, PM 1.9/2.8. All work will be performed within state right-of-way.

### 1.3.2. NO BUILD ALTERNATIVE

**No-Build Alternative:** The No-Build Alternative does not satisfy the purpose and need of the project and is not recommended.

## 1.4 Regulatory Setting

The following sections outlines the federal, state, and local regulatory protections for paleontological resources that apply to the proposed project.

### 1.4.1. Federal Laws & Regulations

The following federal laws protect paleontological resources on federal lands, as well as Projects performed by federal agencies such as the United States Department of Transportation.

#### [Antiquities Act of 1906](#)

The Federal Antiquities Act of 1906 (16 United States Code [USC] 431 to 433) states, in part:

*... any person who shall appropriate, excavate, injure or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States, without the permission of the Secretary of Caltrans of the Government having jurisdiction over the lands on which said antiquities are situated, shall upon conviction, be fined in a sum of not more than five hundred dollars or be imprisoned for a period of not more than ninety days, or shall suffer both fine and imprisonment, in the discretion of the court.*

Although there is no specific mention of natural or paleontological resources in the Act itself, or in the Act's uniform rules and regulations (Title 43 Part 3, Code of Federal Regulations (43 CFR 3)), "objects of antiquity" has been interpreted to include fossils by the Bureau of Land Management, the National Park Service, the Forest Service, and other federal agencies. Permits to collect fossils for paleontological resource evaluation and mitigation efforts on lands administered by federal agencies are authorized under the Antiquities Act (see Permit Requirements section below).

#### Federal-Aid Highway Acts (FHWA) of 1956 (20 USC 305.20)

The Federal-Aid Highway Act of 1956 was the first highway act to specifically authorize the use of federal highway funds for archaeological and paleontological salvage. The 1956 authorization was reaffirmed by Section 305 of the Federal-Aid Highway Act of 1958 and was finally made generic to highway acts by Section 8(e) of the Federal-Aid Highway Act of 1960 (P.L. 86-657).

#### National Environmental Policy Act (NEPA) of 1969 (42 USC 4321)

NEPA directs federal agencies to use all practicable means to "Preserve important historic, cultural, and natural aspects of our national heritage..." (Section 101(b)(4)). Regulations for implementing the procedural provisions of NEPA are found in 40 CFR 1500-1507.

Paleontological resources are a natural aspect of our national heritage. Paleontological resources must be considered during the Project scoping process and if the presence of a paleontological resource is identified, federal agencies and their agents must take the resource into consideration when evaluating Project effects. Consideration of paleontological resources may be required under NEPA when a Project is proposed for development on federal land, land under federal jurisdiction, or involves federal funding. The manner of consideration depends upon the federal agency involved.

#### Limitation on Federal Participation (23 CFR 1.9)

Section 1.9(a) of the Code of Federal Regulations Title 23 states:

*Federal-aid funds shall not participate in any cost which is not incurred in conformity with applicable Federal and State law, the regulations in this title, and policies and procedures prescribed by the Administrator. Federal funds shall not be paid on account of any cost incurred prior to authorization by the Administrator to the State highway department to proceed with the Project or part thereof involving such cost.*

Since the California Environmental Quality Act (CEQA) requires that paleontological resources be addressed as part of the State environmental process (see CEQA below), any project, administered by a state agency that is receiving federal-aid funds, must also address paleontological resources.

### Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.)

The Federal Land Policy and Management Act constituted a major step in simplifying and unifying federal land management and land-use authorization practices. It is primarily focused on agencies in United States Department of the Interior. While there is no specific paleontological nexus, this act does serve as one authority (among others) which authorizes actions on federal lands, which can include requiring permits for paleontological investigations and mitigation activities.

### Archaeological, Paleontological, and Historical Sites (PRC, Division 4, Chapter 1.7)

Section 5097.5 of the PRC states:

*No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.*

As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the State, or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, Caltrans as well as local project proponents, are required to comply with PRC 5097.5 for their own activities, including construction and maintenance, as well as for permit actions (e.g., encroachment permits) undertaken by others.

## 1.4.2. State Laws & Regulations

### California Environmental Quality Act (CEQA) of 1970

The CEQA Statute, chapter 1, section 21002, states that:

*It is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.*

The CEQA Guidelines, article 1, section 15002(a)(3), state that CEQA is intended to:

*Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.*

Paleontological resources are specifically referenced in CEQA Appendix G: The Environmental Checklist Form, which asks: *Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

Caltrans considers unique paleontological resources or sites to be those resources or sites that meet the criteria for scientific significance, as defined above in the Definitions section of this chapter. If paleontological resources are identified during the Preliminary Environmental Analysis Report, or other Project scoping studies (e.g., Preliminary Environmental Study), as being within the proposed Project corridor, the sponsoring agency (Caltrans or local) must take those resources into consideration when evaluating Project effects.

### 1.4.3. Local Regulatory Setting

Various cities and counties have passed ordinances and resolutions related to paleontological resources within their jurisdictions. These regulations provide additional guidance on assessment and treatment measures for projects subject to CEQA compliance. Caltrans, while not required to comply with local laws and ordinances, will endeavor to do so to the full extent possible as the responsible agency under CEQA.

#### County of Orange

The County of Orange provides regulations for the protection, assessment, and mitigation of fossil resources within unincorporated areas of the County in its Standard Conditions of Approval (SCA) (County of Orange, 2001). Specifically, paleontological resources are addressed within SCA A05 through A07:

**A05 PALEONTOLOGICAL SURVEY:** Prior to the issuance of any grading permit, the applicant shall obtain approval from the Manager, Harbors Beaches and Parks (HBP)/Coastal and Historical Facilities of a report on a literature and records search and field survey of the project site. The applicant shall retain a County-certified paleontologist to complete the literature and records search for recorded sites and previous surveys. The paleontologist shall conduct a field survey unless the entire proposed project site has been documented as previously surveyed in a manner which meets the approval of the Manager, HBP/Coastal and Historical Facilities. The applicant shall implement the mitigation measures in the report in a manner meeting the approval of the Manager, BP/Coastal and Historical Facilities.

**A06 PALEONTOLOGICAL PREGRADE SALVAGE:** Prior to the issuance of any grading permit, the project applicant shall obtain approval from Manager, HBP/Coastal and Historical Facilities of a report of the pre grade paleontological salvage operation. The applicant shall retain a County-certified paleontologist to conduct pre-grade salvage excavation and prepare a report of the exposed resources. The report shall include methodology, an analysis of artifacts found, a catalogue of artifacts, and their present repository. Applicant

shall prepare excavated materials to the point of identification. The applicant shall offer excavated finds for curatorial purposes to the County of Orange, or its designee, on a first refusal basis. Applicant shall pay curatorial fees if an applicable fee program has been adopted by the Board of Supervisors, and such fee program is in effect at the time of presentation of the materials to the County of Orange or its designee, all in a manner meeting the approval of the Manager, HBP/Coastal and Historical Facilities.

**A07 PALEONTOLOGICAL OBSERVATION AND SALVAGE:** Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, Subdivision and Grading, that applicant has retained a County certified paleontologist to observe grading activities and salvage and catalogue fossils as necessary. The paleontologist shall be present at the pre-grade conference, shall establish procedures for paleontological resource surveillance, and shall establish, in cooperation with the applicant, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If the paleontological resources are found to be significant, the paleontologist shall determine appropriate actions, in cooperation with the applicant, which ensure proper exploration and/or salvage.

Prior to the release of the grading bond the applicant shall submit the paleontologist's follow up report for approval by the Manager, HBP/Coastal and Historical Facilities. The report shall include the period of inspection, a catalogue and analysis of the fossils found, and the present repository of the fossils. Applicant shall prepare excavated material to the point of identification. The applicant shall offer excavated finds for curatorial purposes to the County of Orange, or its designee, on a first refusal basis. These actions, as well as final mitigation and disposition of the resources, shall be subject to approval by the HBP/Coastal and Historical Facilities. Applicant shall pay curatorial fees if an applicable fee program has been adopted by the Board of Supervisors, and such fee program is in effect at the time of presentation of the materials to the County of Orange or its designee, all in a manner meeting the approval of the Manager, HBP/Coastal and Historical Facilities.

### City of San Juan Capistrano

The City of San Juan Capistrano's General Plan (August 2022), list the provisions and regulations for the protection, assessment, and mitigation of fossil resources under their *Cultural Resource Element*, that adhere to the guidelines outlined by CEQA. Paleontological resources have been uncovered in various portions of the city. The valley area, with its alluvial deposits has less potential to produce fossils, while the older foothills have a higher potential to yield fossils. The Capistrano and Monetary Formations and San Onofre Breccia, mainly located in the eastern foothills of the city, are considered to be of high paleontological importance (General Plan 1999). This is due to the numerous fossil sites which have been found in these bedrock units. Additionally, the General Plan stated the following goal and policies regarding

resources, specially related to “Land Use” and “Conservation & Open Space” planning:

*Goal 1- Preserve and protect historical, archaeological and paleontological resources.*

- Policy 1.1: Balance the benefits of development with the project’s potential impacts to existing cultural resources
- Policy 1.2: Identify, designate, and protect buildings and sites of historic importance.
- Policy 1.3: Identify funding programs to assist private property owners in the preservation of buildings and sites of historic importance.

## **1.5. Geologic Setting**

Knowledge of the project geology and stratigraphy is needed to assess paleontological resource potential. It is important to know what rock units are present in the project area, what makes up the units, and the depth of these units. The following sections describe the regional and local geologic context of the project.

### **1.5.1. Regional Geologic Setting**

The Project area is in the Peninsular Ranges Geomorphic Province, a 900-mile-long northwest southeast trending structural blocks with similarly trending faults, that extends from the Transverse Ranges in the north to the tip of Baja California in the south and includes the Los Angeles Basin (California Geological Survey, 2002; Norris and Webb, 1976). The total width of this province is 225 miles, extending from the Colorado Desert in the east, across the continental shelf, to the southern Channel Islands (Santa Barbara, San Nicolas, Santa Catalina, and San Clemente) in the west (Sharp, 1976). This province is characterized by a series of mountain ranges and valleys that trend in a northwest-southeast direction roughly parallel to the San Andreas Fault Zone (Norris and Webb, 1976; Sharp, 1976). It contains extensive pre-Cenozoic (more than 66 million years ago [Ma]) igneous and metamorphic rocks covered by Cenozoic (less than 66 Ma) sedimentary deposits (Norris and Webb, 1976)

### **1.5.2. Local Geologic Setting (Project Area)**

The project areas described in the 2023 Project Impact Report (Caltrans 2023) prepared for the Project contain the following geologic mapped units (Morton and Miller, 2006): Quaternary Period deposits- Very Young Wash Deposits; Landslide Deposits; Young Alluvial Fan Deposits; Young Axial Channel Deposits; Very Old Axial Channel Deposits; Neogene Period deposits belonging to the— Niguel, Capistrano, Topanga, San Onofre Breccia and Monterrey Formations; and Cretaceous Period deposits belonging to the Williams Formation (Pleasant and Schulz Ranch Members) and Santiago Peak Volcanics [Table 1-5]. Figures 2a & b shows the geology within and surrounding the Project area up to 1-mile. All geologic units found within the Project area and their paleontological sensitivities are described in more detail in Section 1.5 Geology. Dates

for the geologic time intervals referenced in this report are derived from the *International Chronostratigraphic Chart* published by the International Commission on Stratigraphy (Cohen et al., 2023).

As exact vertical geologic units' depths are undetermined, Section 1.5.2.1. describes the potential units (mapped immediately adjacent) that the Project may encounter at greater depths or from re-deposited seismic or landslide activities.

Table 1-5. Geologic Units within Project Area

| Epoch                            | Age (years ago)             | Geologic Unit/Formation                          | Map Symbol | Caltrans Sensitivity Designation |
|----------------------------------|-----------------------------|--------------------------------------------------|------------|----------------------------------|
| Cenozoic Era (Quaternary Period) |                             |                                                  |            |                                  |
| late Holocene                    | Less than 4,200             | Very young wash deposits                         | Qw         | Low                              |
| Holocene and Pleistocene         | Less than 126,000           | Landslide deposits                               | Qls        | Low (to High)                    |
| Holocene and late Pleistocene    | Less than 126,000           | Young Alluvial Valley Deposits                   | Qya        | Low (to High)                    |
| Holocene and late Pleistocene    | Less than 126,000           | Young Axial Channel Deposits                     | Qyf        | Low (to High)                    |
| middle to early Pleistocene      | 7 Ma to 5 Ma                | Very Old Axial-Channel Deposits                  | Qvoa       | Low (to High)                    |
| late Pleistocene                 | 2.58 Ma to 11,700 years old | Old Axial-Channel Deposits                       | Qoa        | Low (to High)                    |
| Cenozoic Era (Neogene Period)    |                             |                                                  |            |                                  |
| Miocene and Pliocene             | 20 Ma to 16 Ma              | Capistrano Formation                             | Tsh        | High                             |
| Middle Miocene                   | 49 to 40 Ma                 | Santiago Formation                               | Tss        | High                             |
| Miocene                          | 2.6 Ma to 23 Ma             | Monterey Formation                               | Tm         | High                             |
| Mesozoic Era (Cretaceous Period) |                             |                                                  |            |                                  |
| Late Cretaceous                  | 100 Ma to 66 Ma             | Williams Formation, Shultz Ranch Lower Siltstone | Ksh        | (Very) High                      |
| Late Cretaceous                  | 100 Ma to 66 Ma             | Williams Formation, Pleasant Sandstone Member    | Kss        | (Very) High                      |
| Cretaceous                       | 100 Ma to 66 Ma             | Santiago Peak Volcanics                          | Kv         | No                               |

### 1.5.2.1 DESCRIPTION OF GEOLOGIC UNITS INTERSECTING THE PROJECT

#### *Cenozoic Era (Quaternary Period) Deposits*

##### **Very young landslide deposits (Qls) (Holocene and Pleistocene)**

Several small sections of the Project alignment are partially underlain by late Pleistocene- and Holocene-age (less than approximately 129,000 years old) landslide deposits derived from the Capistrano Formation, the San Onofre Breccia, and the Santiago Formation. Landslide deposits are variable in nature, ranging from small, shallow slides composed of chaotically oriented, dissociated debris, to large, deep-seated slides composed of slumped, tilted, or rotated masses of coherent bedrock. Because the landslide deposits originated from within undifferentiated deposits of the Capistrano Formation, Santiago Formation, and San Onofre Breccia, which are assigned a high potential, it is possible that fossils may be present within these deposits. Landslide deposits are assigned an undetermined paleontological potential due to the unknown composition of these deposits along the Project alignment. In general, landslides containing slumped intact blocks of strata are assigned a high paleontological potential (because their original stratigraphic context may be discernable), while those composed of chaotic landslide debris have a low paleontological potential (because their original stratigraphic context has been lost) [SDNHM; Mueller 2025]. These deposits have a Caltrans rating of *low to high potential*.

##### **Young landslide and alluvial-fan deposits (Qya, Qyf) (late Pleistocene to Holocene)**

Late Pleistocene- to Holocene age (less than 129,000 years old) axial-channel (Qya), alluvial-fan (Qyf), occur in low-lying areas throughout the Project alignment. Several small sections of the Project alignment are partially underlain by late Pleistocene- and Holocene-age (less than approximately 129,000 years old) landslide deposits derived from the Capistrano Formation, the San Onofre Breccia, and the Santiago Formation. Landslide deposits are variable in nature, ranging from small, shallow slides composed of chaotically oriented, dissociated debris, to large, deep-seated slides composed of slumped, tilted, or rotated masses of coherent bedrock. Because the landslide deposits originated from within undifferentiated deposits of the Capistrano Formation, Santiago Formation, and San Onofre Breccia, which are assigned a high potential, it is possible that fossils may be present within these deposits. Landslide deposits are assigned an undetermined paleontological potential due to the unknown composition of these deposits along the Project alignment. In general, landslides containing slumped intact blocks of strata are assigned a high paleontological potential (because their original stratigraphic context may be discernable), while those composed of chaotic landslide debris have a low paleontological potential (because their original stratigraphic context has been lost) [SDNHM; Mueller 2025]. These deposits have a Caltrans rating of *low potential*.

##### **Old and very axial-channel deposits (Qoa, Qvoa) (Pleistocene)**

Pleistocene-age (approximately 2.58 million to 11,700 years old) old axial-channel deposits and very old axial-channel deposits underlie very small areas along the

northern and southeastern portions of the Project alignment and may underlie young surficial deposits elsewhere along the alignment. Fossils have been collected from Pleistocene-age alluvial deposits at several locations elsewhere in coastal Orange County and San Diego County. Recovered fossils include skeletal remains of reptiles and birds (e.g., pond turtles, lizards, passenger pigeons, and hawks), small, bodied mammals (e.g., moles, shrews, mice, and squirrels), and large-bodied mammals (e.g., ground sloths, wolves, bears, tapirs, horses, camels, deer, giant bison, mastodon, and mammoths). Due to the rare but scientifically significant vertebrate fossils discovered elsewhere in Orange County and San Diego County in Pleistocene-age alluvial deposits, they are assigned a high paleontological resource potential [SDNHM; Mueller 2025]. These deposits have a Caltrans rating of *low to high potential*.

### *Cenozoic Era (Neogene Period) Deposits*

#### **Capistrano Formation, Oso Member (Tco) (late Miocene to early Pliocene)**

The late Miocene- to early Pliocene-age (approximately 7 to 5 million years old) Capistrano Formation partially underlies the western portion of the Project alignment and likely underlies young axial channel deposits elsewhere in the western portion of the alignment. The SDNHM has six fossil collection localities from the Capistrano Formation within a one-mile radius of the alignment. These localities produced trace fossils in the form of burrows, as well as fossil impressions and remains of marine invertebrates (e.g., clams and snails) and marine vertebrates (e.g., sharks, toothed whales, fur seals, and baleen whales). The siltstone facies of the Capistrano Formation is known to be abundantly fossiliferous in Orange County, and abundant vertebrate fossils have been collected from the Oso Sand Member of the Capistrano Formation. The Capistrano Formation has produced well preserved and scientifically significant fossil remains of marine organisms (e.g., microfossils, benthic invertebrates, and marine vertebrates, including extinct pinnipeds of several subfamilies), and has also produced a small but significant assemblage of terrestrial mammals, as well as an important flora of terrestrial plants and is therefore assigned a high paleontological potential [SDNHM; Mueller 2025]. These deposits have a Caltrans rating of *high potential*.

#### **Monterey Formation (Tm) (Late and Middle Miocene)**

The Monterey Formation is composed of interbedded marine deposits of siliceous and diatomaceous, white to pale brown, thinly laminated marine siltstone and tan fine- to medium-grained sandstone from the late and Middle Miocene (5.3 Ma to 16 Ma ago) (Morton and Miller, 2006). These deposits are mapped within a 1-mile radius, south of SR-241, have a Caltrans rating of *low to high potential*, at greater depths, and will likely not be encountered during project construction.

### *Mesozoic Era (Cretaceous Period) Deposits*

#### **Williams Formation, Pleasant Sandstone Member (Ksh), Shultz Ranch Member, (Kss) (Late Cretaceous)**

The Pleasants Sandstone and Schulz Ranch members of the late Cretaceous-age (approximately 100 to 66 million years old) Williams Formation. The Schulz Ranch and Pleasants Sandstone members of the late Cretaceous-age (approximately 100 to 66 million years old) Williams Formation partially underlie a small area along the central portion of the Project alignment. Elsewhere, the Pleasants Sandstone member commonly produces fossiliferous concretions (Morton and Miller, 2006). Because of the significant Cretaceous-age fossils that have been recovered, the Williams Formation is assigned a high paleontological potential [SDNHM; Mueller 2025]. These deposits have a Caltrans rating of (very) *high potential*.

### **1.5.2.2 DESCRIPTION OF GEOLOGIC UNITS WITHIN A 1-MILE RADIUS OF THE PROJECT**

#### ***Cenozoic Era Deposits***

##### **Very young wash deposits (Qw) (late Holocene)**

The undifferentiated very young wash sediments (Qw) were deposited less than 4,000 years old during the late Holocene. These deposits form the active portions of modern rivers and consist of sand to boulder clasts from local sources. The unconsolidated sediments coarsen upstream with boulders being deposited during flash floods. While the clasts range from angular to rounded, the larger clasts are typically more rounded than smaller clasts. There is essentially no soil development present (Morton and Miller 2006). These have a Caltrans ranking of *no to low* sensitivity.

##### **Santiago Formation (middle Eocene)**

Strata of the middle Eocene-age (approximately 49 to 40 million years old) Santiago Formation occur along the majority of the central portion of the Project alignment. The SDNHM has one recorded fossil locality from Member B of the Santiago Formation within a one-mile radius of Project alignment (SDSNH 6407). This locality produced fossil remains of marine vertebrates (e.g., bony fish) and terrestrial vertebrates (e.g., lizards, rodents, insectivores, and a leptoreodon). Elsewhere in southern California, the Santiago Formation has produced significant terrestrial fossil vertebrate localities and is therefore considered to have a high paleontological potential [SDNHM; Mueller 2025]. These deposits have a Caltrans rating of (very) *high potential*.

*Mesozoic Era Deposits***Santiago Peak Volcanics (Kv) (early Cretaceous)**

Crystalline basement rocks of early Cretaceous age (approximately 145 to 125 million years old) are exposed at the surface in the far northeastern portion of the Project alignment. As redefined by Kimbrough et al. (2014), the Santiago Peak Volcanics is now considered an entirely volcanic rock unit of early Cretaceous age that occurs over a 250-kilometer-long belt along the western edge of the Peninsular Ranges batholith from the Santa Ana Mountains in Orange County southward to the Agua Blanca Fault south of Ensenada in northern Baja California, Mexico. No paleontological resources are known from the redefined Santiago Peak Volcanics. Consequently, the Santiago Peak Volcanics are assigned *no* paleontological resource potential [SDNHM; Mueller 2025].

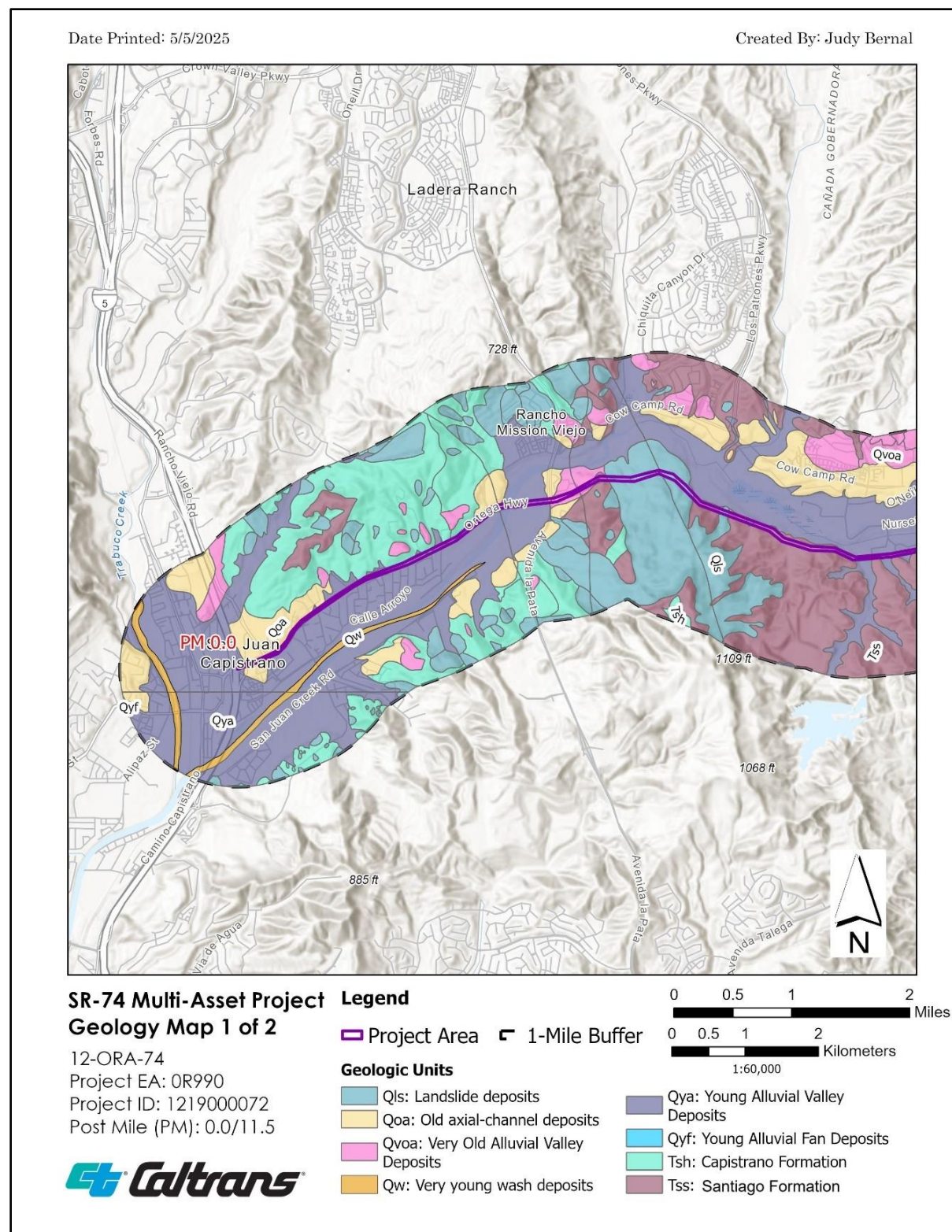


Figure 2a: Geologic Map of the Project Area

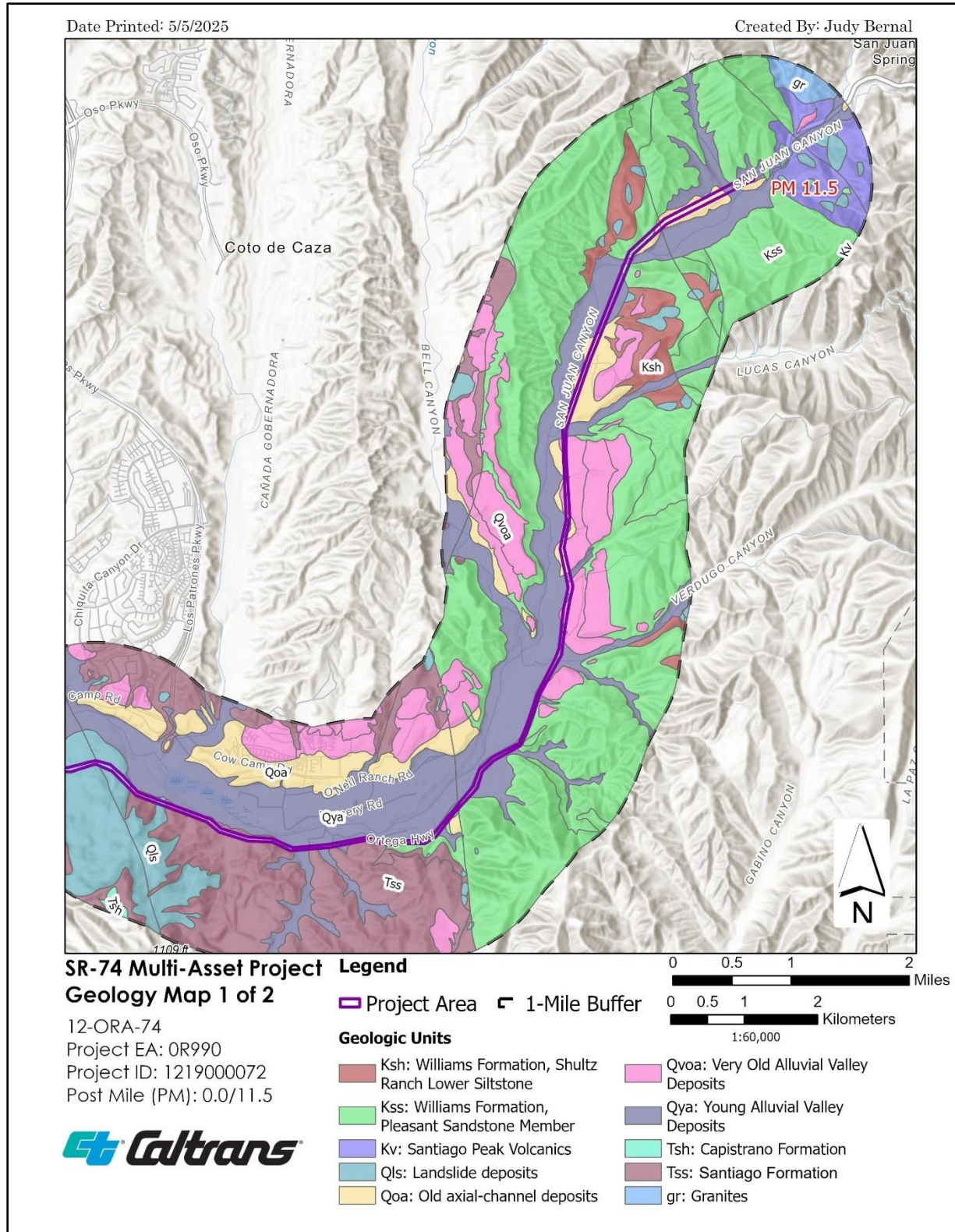


Figure 2b: Geologic Map of the Project Area

### **1.5.3. Cross Sections and Topographic Overviews**

The Project consists largely of surface roadway improvements including pavement rehabilitation, Metal Beam Guardrail System (MBGS) replacements, ladder crosswalks and bike lane pavement markings. The proposed 24 locations for curve warning signs additions, intersect paleontological sensitivity units throughout the length of the project area, however the methods of construction will not result in any significant scientific discoveries. Typical cross sections for these activities are in Appendix E- Project Plans, *Typical Cross Section*.

Subsurface activities that may impact paleontological sensitive units are limited to the three locations proposed for drainage rehabilitation construction. Project plan cross section information is not currently available for drainage work but will be during the next phase of planning. Thus, to evaluate potential subsurface potential topographic overview renderings were created for reach location (Appendix F. Figures 1-3) and a field survey was conducted April 16, 2025 (Section 2.3 or PIR/PER).

## 2. Paleontological Resource Identification

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### 2.1 Fossil Locality Search

#### 2.1.1. Methods

To determine whether fossils have been found in or near the Project corridor, fossil locality searches were conducted. The following on-line and record search databases were queried: Paleobiology Database (PBDB 2024), Los Angeles Natural History Museum Database (NHMLA 2024), San Diego Natural History Museum Database (SDNHM 2024), and Catalog of Late Quaternary Vertebrates (Jefferson 1991). Searches were conducted for a minimum of a one-mile area around the Project corridor. Full search results for Orange County from NHMLA, SDNHM and PBDB (2024) are provided in Appendix D and are interpreted with respect to the Project below. In addition to the records search described above, a literature review was conducted. This review is conducted to find more detailed information about particular a fossil or to look for occurrences of fossils not recorded in the databases or detailed descriptions of geologic units in the Project corridor, stratigraphic information, and land use history. The following sources were consulted for the literature review: peer reviewed journals, scientific reports, geologic maps, dissertations, geological maps, historic topographic maps, agency fact sheets, and news sources.

#### 2.1.2 Results

The records search and literature review revealed that vertebrate and invertebrate fossils are infrequent occurrences within 1-mile of the Project Area, with the exception of the Niguel Formation and Capistrano Formation at the intersection of Interstate-5/SR-74 and no area located within the immediate area of proposed ground disturbance. Of these fossil occurrences are present at surface or below surface at shallow depths (Appendix C).

**NHMLA.** The NHMLA was contacted for a 1-mile search radius of the Project Area within the *Capistrano* and *Canada Gobernadora* USGS 7.5-munite quadrangles. The results were dated July 5, 2025 and document a total of approximately 20 vertebrae and invertebrate fossil resources that bound the 1-mile Project Area (Table 4-1a) at either the surface or at depth; of these none are directly within the Project Area.

Additionally, the study indicates that the proposed Project has the potential to impact older Pleistocene terraced deposit that may occur at surface or subsurface levels of the following: the Capistrano Formation, the Niguel Formation, the Williams Formation, the Ladd Formation (Baker Canyon member), and the Monterey Formation. These units have high potential and intersect portions of the Project area.

Table 4-1a. NHMLA, Locality Search Results (July 2025).

| Locality No.                                            | Geologic Unit                                              | Taxa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Depth   | Location                                                     |
|---------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------|
| LACM VP 5792;<br><br>LACM IP 11929 – 11930, 11939-11942 | Capistrano Formation (Blancan Sand facies)                 | White shark ( <i>Carcharodon carcharias</i> ), megalodon shark ( <i>C. megalodon</i> ), requiem shark ( <i>Carcharhinus</i> ), mako sharks ( <i>Isurus planus</i> , <i>I. oxyrinchus</i> ), weasel shark ( <i>Hemipristis serra</i> ), sixgill sharks ( <i>Hexanchus</i> ), eagle ray ( <i>Myliobatis</i> ), sheephead ( <i>Semicossyphus pucker</i> ); flightless alcid ( <i>Mancalla diegense</i> ), grebe ( <i>Podiceps parvus</i> ), pelicans ( <i>Pelecaniformes</i> ), cormorant ( <i>Phalacrocoracidae</i> ); sea lion ( <i>Otarinae</i> ), eared seal ( <i>Otariidae</i> ), walrus family ( <i>Odobeninae</i> ), dugong ( <i>Dugongidae</i> ), dolphins ( <i>Parapontoporia</i> , <i>Stenella</i> ), sperm whale ( <i>Scaldicetus</i> ), toothed whale ( <i>Odontoceti</i> ), baleen whale ( <i>Mysticeti</i> ); western pond turtle ( <i>Clemmys marmorata</i> ), elephant family ( <i>Proboscidea</i> ), antelope family ( <i>Antilocapridae</i> ), camel family ( <i>Camelidae</i> ); uncatalogued invertebrates | Unknown | Marbella Golf & Country Club, San Juan Capistrano            |
| LACM IP 1144                                            | *Niguel Formation                                          | Invertebrates (bivalves)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Unknown | San Juan Capistrano (more precise locality not available)    |
| LACM VP 7296                                            | Capistrano Formation                                       | White shark ( <i>Carcharodon</i> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Unknown | West of Calle Bollero, southwest of San Juan Hills Golf Club |
| LACM IP 8158-8160                                       | Williams Formation (shales)                                | Invertebrates (uncatalogued)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Surface | Bean Creek at the North Clay Mine., San Juan Capistrano      |
| LACM IP 16858                                           | Ladd Formation (50 ft from top of shale)                   | Invertebrates (uncatalogued)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Surface | Lucas Canyon                                                 |
| LACM IP 16868                                           | Ladd Formation, Baker Canyon Member (friable conglomerate) | Invertebrates (uncatalogued)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Surface | Baker Canyon                                                 |

| Locality No.          | Geologic Unit                                           | Taxa                                                                                                                                                                                                                                                                                                                                                                                                                                          | Depth                  | Location                                                                      |
|-----------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------|
| LACM IP 10119         | Williams Formation (sandstone above basal conglomerate) | Invertebrates (uncatalogued)                                                                                                                                                                                                                                                                                                                                                                                                                  | Surface                | North of Hill 1645 on Bell Canyon San Juan Divide; Santa Ana Mtns             |
| 49 LACM VP localities | Monterey Formation                                      | Hundreds of specimens including sperm whale ( <i>Physeteridae</i> , <i>Scaldicetus</i> ), baleen whale ( <i>Balaenopteridae</i> ), walrus ( <i>Imagotaria</i> ), eared seal ( <i>Pithanotaria</i> ), toothed whale ( <i>Odontoceti</i> ), southern fur seal ( <i>Arctocephalus</i> ), dugong ( <i>Dusisiren</i> ); turtle ( <i>Chelonia</i> ); birds ( <i>Gavia</i> , <i>Praemancalla</i> , <i>Puffinus</i> ); other uncatalogued vertebrates | Surface and subsurface | San Juan Capistrano quad                                                      |
| LACM VP 3804          | Niguel Formation (brown to buff silt)                   | Requiem shark ( <i>Carcharodon sulcidens</i> )                                                                                                                                                                                                                                                                                                                                                                                                | Surface                | South of Oso Parkway approximately one half mile west of San Diego Freeway    |
| LACM VP 5551          | Niguel Formation (middle)                               | Walrus clade ( <i>Odobeninae</i> ), primitive baleen whale ( <i>Herpetocetus</i> ), eared seal ( <i>Ottariidae</i> ), dugong ( <i>Dugongidae</i> ), baleen whale ( <i>Mysticeti</i> )                                                                                                                                                                                                                                                         | Unknown                | La Paz Road & Paseo de Valencia                                               |
| LACM VP 1895, CIT592  | Ladd Formation                                          | Fish and other uncatalogued vertebrates                                                                                                                                                                                                                                                                                                                                                                                                       | Surface                | Santiago Canyon                                                               |
| LACM VP 1115          | Pleistocene terrace deposit                             | Mammoth ( <i>Mammuthus</i> )                                                                                                                                                                                                                                                                                                                                                                                                                  | Unknown                | near Salt Creek Trail in Salt Creek Corridor Regional Park; San Joaquin Hills |
| LACM VP 1215          | Unknown formation (late Pleistocene)                    | Shark, mammals (unspecified)                                                                                                                                                                                                                                                                                                                                                                                                                  | Surface in stream bed  | Oso Creek at Crown Valley Parkway, San Juan Capistrano                        |

VP= Vertebrate Paleontology; IP= Invertebrate Paleontology; Bgs= Below Ground Surface

\*The Niguel Formation is not directly mapped on the surface of the 1-mile project area, but can occur at greater unknown depths below mapped surface geology. The unit lies at the northwest extension outside the project areas.

**NHMLA Summary and Recommendations:** Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a paleontological assessment be conducted by a paleontologist meeting Federal (43 Code of Federal Regulations Part 49.110) or Society of Vertebrate Paleontology standards for compliance with applicable regulations, such as CEQA or NEPA.

**SANHM.** The SDNHM was contacted for a 1-mile search radius of the Project Area within the *Capistrano* and *Canada Gobernadora* USGS 7.5-minute quadrangles. The results were dated July 10, 2025, and document 7 fossil resource within the 1-mile radius (Table 4-1b). Of these localities, six are from the Capistrano Formation and one is from the Santiago Formation; none are within the immediate project area.

Additionally, the study indicates that the proposed Project has the potential to impact late Pleistocene- to Holocene-age young axial channel deposits, late Pleistocene- to Holocene-age young landslide deposits, Pleistocene-age old and very old axial-channel deposits, the late Miocene- to early Pliocene-age Capistrano Formation, the middle to late Miocene-age Monterey Formation, the middle Miocene-age San Onofre Breccia, the middle Eocene-age Santiago Formation, the late Cretaceous-age Trabuco Formation, the late Cretaceous-age Williams Formation, the late Cretaceous-age Ladd Formation, and the early Cretaceous-age Santiago Peak Volcanics. These units have high potential and intersect portions of the Project area.

Table 4-1b. SDNHM Locality Search Results (July 2025).

| Locality No. | Locality Name                   | Geologic Unit                          | Taxa       | Depth/Elevation              |
|--------------|---------------------------------|----------------------------------------|------------|------------------------------|
| 3841         | Lomas San Juan                  | Capistrano Formation, siltstone member | Not listed | Unknown; at 330-ft elevation |
| 3842         | Lomas San Juan                  | Capistrano Formation, siltstone member | Not listed | Unknown; at 155-ft elevation |
| 3843         | Lomas San Juan                  | Capistrano Formation, siltstone member | Not listed | Unknown; at 150-ft elevation |
| 3845         | Lomas San Juan                  | Capistrano Formation, siltstone member | Not listed | Unknown; at 190-ft elevation |
| 8692         | SDG&E SOCRE                     | Capistrano Formation, siltstone member | Not listed | Unknown; at 205-ft elevation |
| 8693         | SDG&E SOCRE                     | Capistrano Formation, siltstone member | Not listed | Unknown; at 209-ft elevation |
| 6407         | Rancho Mission Viejo Substation | Santiago Formation, member B           | Not listed | Unknown; at 265-ft elevation |

**SANHM Summary and Recommendations.** The high paleontological potential of old and very old axial channel deposits, the Capistrano Formation, the Monterey Formation, the San Onofre Breccia, the Santiago Formation, the Williams Formation, and the Ladd Formation and the undetermined potential of landslide deposits derived from these geologic units (SVP, 2010), as well as the presence of paleontological collection localities in the vicinity of the Project alignment, suggest the potential for construction of the proposed Project to result in impacts to paleontological resources. Any proposed excavation activities that extend deep enough to encounter previously undisturbed deposits of these geologic units (i.e., below the depth of any previously imported artificial fill or disturbed sediments present along the Project alignment) have the potential to impact the paleontological resources preserved therein. If such excavations are required for Project construction, implementation of a complete paleontological resource mitigation program during ground-disturbing activities is recommended.

## 2.2 Literature Review

### 2.2.1 Additional Literature Review Methods

A search of the Paleobiology public digital database (PMDB) (Source: Jefferson 1991) was conducted on April 24, 2025. The PBDB database has documented 3 vertebrae and invertebrate fossil resources that bound the 1-mile Project Area; none are directly within the Project Area along SR-74 ROW (Table 2-2a). Additionally, the search of the OC Parks public digital database was conducted on April 24, 2025. The OC Parks database has documented 3 vertebrae and invertebrate fossil resources that bound the 1-mile Project Area; none are directly within the Project Area (Table 2-2b). Depths for both PBDB and OC Parks were not provided. Maps of known fossil bearing units were created from the literature review and are available in Appendix C- Exhibit C.

### 2.2.2 Results

Table 2-2a. PBDM Fossil Resources within Project Area (April 2025).

| Collection No. | Item Count | Type | Taxa                                                   | Geologic Unit                  | Age                           |
|----------------|------------|------|--------------------------------------------------------|--------------------------------|-------------------------------|
| 72109          | 1          | IP*  | Mollusca<br>( <i>Gastropoda</i> )                      | Williams Fm.-<br>Pleasant Mbr. | Late Cretaceous               |
| 210707         | 1          | IP   | Mollusca<br>( <i>Bivalvia</i><br><i>Vesicomyidae</i> ) | Niguel Formation               | Early Pleistocene             |
| 84896          | 1          | VP** | Chordata<br>( <i>Mammalia</i><br><i>Delphinidae</i> )  | Rancholabrean                  | Middle to late<br>Pleistocene |

\* IP= Invertebrate Paleontology \*\*VP= Vertebrate Paleontology

Table 2-2b. OC Parks Fossil Resources within Project Area (April 2025).

| Catalog No. | Item Count | Type | Taxa                                                 | Geologic Unit | Age          |
|-------------|------------|------|------------------------------------------------------|---------------|--------------|
| 3612        | 1          | IP   | Mollusca<br>( <i>Gastropoda</i> )                    | Capistrano    | Miocene      |
| 1165        | 27         | IP   | Mollusca<br>( <i>Bivalvia</i><br><i>Pectinidae</i> ) | Capistrano    | Late Miocene |
| 1164        | 1          | IP   | Mollusca<br>( <i>Bivalvia</i><br><i>Pectinidae</i> ) | Capistrano    | Late Miocene |

\*IP= Invertebrate Paleontology

## 2.3 Paleontological Field Survey

### 2.3.1 Methods

A field survey was conducted on April 16, 2025, by Judy Bernal, M.Sc., and Victoria Stosel, M.A. of Caltrans, District 12. The purpose of the survey was to observe topography, any geologic exposures, drainage features, and land use. The Project corridor was characterized in field notes and photographs were taken.

### 2.3.2. Field Results

Field observations are documented below and in Appendix D- Field Forms. Survey photos of the Project Area and relevant geologic units are depicted (summarized) in Figures 3 through 11. No fossils were observed in the Project corridor, however, potentially high fossil bearing units (Santiago Formation [Tss] and Williams Formation [Kss]) were observed along the Project corridor on the mid and eastern most ROW of SR 74 (see Appendix D- Survey Forms).



Figure 4. Proposed drainage location #1 along WB SR 74, PM 3.6 (Qya deposits), view south.



Figure 5. Proposed drainage location #2 along EB SR 74 ROW, PM 4.2/4.3 (Tss Deposits), view south.



Figure 6. Proposed drainage location #1 along slope of EB SR 74, PM 5.2/5.3 (Qy/s deposits), view south.



Figure 7. Proposed drainage location #1 along (~100 ft. east) EB SR 74 ROW, PM 4.2/4.3 (Tss Deposits), view north.



Figure 8. Proposed drainage location #2 Tss Deposits (~100 ft. east) along EB SR 74 ROW, PM 4.2/4.3, view south.



Figure 9. Proposed drainage location #1 Qy/s deposits EB SR 74, PM 3.6, plan view.



Figure 10. Tss Deposits, pavement rehabilitation work along WB SR 74 ROW, PM 5.4/5.5, view south.



Figure 11. Williams Formation-Pleasant Mbr. (Kss) deposits EB SR 74, PM 6.9/7.0, view southeast.



Figure 12. Tss Deposits, adjacent to proposed EB SR-74 pavement marking ROW, PM 8.0/9.0, plan view.

## Chapter 3 Paleontological Resources Impact & Evaluation

### 3.1 Paleontological Potential of the Proposed Project

The paleontological sensitivity of geological units that would be affected by the Project were assessed using the Caltrans SER paleontology criteria described in Section 1.2 and in Table 3-1 below. Project sensitivity is mapped in Figure 13. This section serves to assess the impacts to paleontological resources from construction of the proposed Project.

Table 3-2: Paleontological Sensitivity

| Caltrans Sensitivity Designation                                                                                                                                                                                                                                                                                                                                  | Characteristics of Geologic Units in this Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>High Potential<br/>(High Sensitivity)</p> <ul style="list-style-type: none"> <li>Capistrano Formation (Tns)</li> <li>Santiago Formation (Tss)</li> <li>Monterey Formation (Tm)</li> <li>Williams Formation (Shultz Ranch [Ksh] and Pleasant [Kss] Members)</li> <li>Older Quaternary Alluvium Deposits (Qvoa/Qoa)\</li> <li>Landslide Deposits (Qw)</li> </ul> | <p>Sedimentary units which, based on previous studies, contain or are likely to contain significant vertebrate, invertebrate, plant fossils, and/or trace fossils. These units include, but are not limited to, sedimentary geologic units that contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary geologic units temporally and lithologically suitable for the preservation of fossils. These units may also include some tuffs as well as low-grade metamorphic geologic units. Fossiliferous deposits with very limited geographic extent or an uncommon origin (e.g., Irvington Bell Quarry, tar pits and caves) are given special consideration and ranked as having high potential. To summarize, high potential includes the potential for containing:</p> <ul style="list-style-type: none"> <li>Abundant vertebrate fossils or abundant and ecologically/phylogenetically significant invertebrate, plant, or trace fossils.</li> <li>A few significant fossils (large or small vertebrate, invertebrate, plant, or trace fossils) that may provide new and significant taxonomic, phylogenetic, ecologic, stratigraphic, and/or climate data.</li> <li>Areas that may contain datable organic or fossil remains older than Recent, including Neotoma (sp.) middens as well as fossils with the potential to provide important geochronologic information.</li> <li>Areas that may contain unique new vertebrate or invertebrate deposits, traces, and/or trackways.</li> </ul> |

| <b>Caltrans Sensitivity Designation</b>                                                                                                                                 | <b>Characteristics of Geologic Units in this Category</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Low Potential<br/>(Low Sensitivity)</p> <ul style="list-style-type: none"> <li>• Younger Quaternary Alluvium Deposits (Qw/Qya/Qyf)</li> </ul>                        | <p>Sedimentary geologic units and some volcanic and low-grade metamorphic geologic units that:</p> <ul style="list-style-type: none"> <li>• Are fossiliferous but have not yielded fossils of scientific value in the past.</li> <li>• Have not yet yielded fossils but possess a potential for containing fossil remains.</li> <li>• Contain common and/or widespread invertebrate fossils if the taxonomy, phylogeny, and ecology of the species contained in the rock are well understood.</li> </ul> <p>Sedimentary geologic units expected to contain vertebrate fossils are not placed in this category because vertebrates are generally rare and found in more localized strata. Projects affecting geologic units designated as having low potential generally do not require full time mitigation monitoring during construction and may not require mitigation monitoring at all. However, in the case of geologic units that have not yet yielded fossils but possess a potential for containing fossil remains, the Principal Paleontologist must determine the most effective and cost-effective way to protect the resource with the approval of the Caltrans District Paleontology Technical Specialist.</p> |
| <p>No Potential<br/>(No Sensitivity)</p> <ul style="list-style-type: none"> <li>• Santiago Volcanics</li> <li>• Very Young Quaternary Alluvium Deposits (Qw)</li> </ul> | <p>Geologic units of intrusive igneous origin, most extrusive igneous rocks, moderately to highly metamorphosed rocks, and artificial fill are classified as having no potential for containing scientifically significant fossils. For projects encountering only these types of geologic units or undisturbed sediments, paleontological resources can generally be eliminated as a concern when the Paleontological Initial Screening or Paleontological Identification Report is prepared.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

Sedimentary rocks expected to contain vertebrate fossils are considered highly sensitive, because vertebrates are generally rare and found in more localized strata. Show citation for geologic formation name.

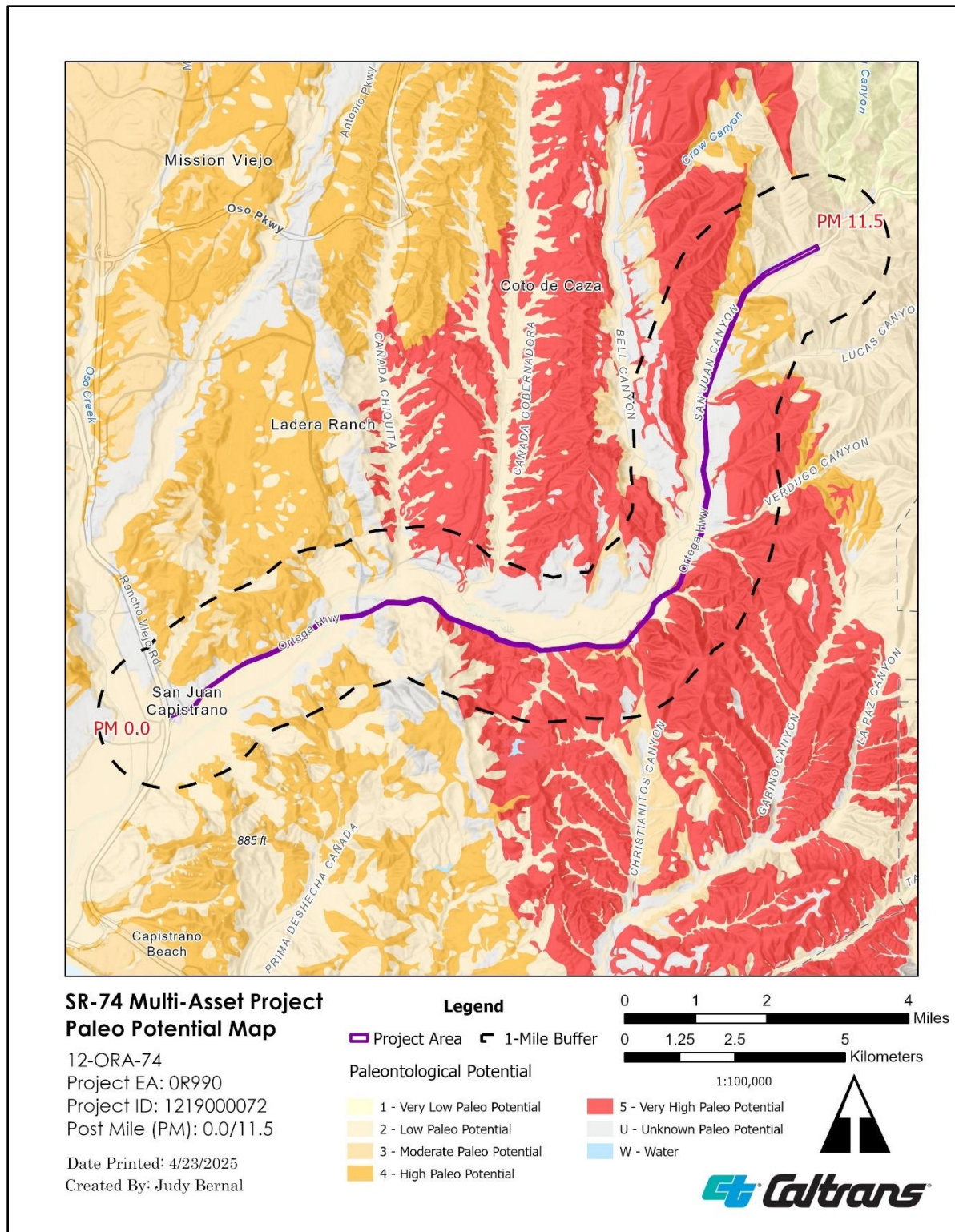


Figure 13. Paleontological Potential Map of the Project Area (Caltrans GIS, April 2025)

### 3.2 Paleontological Resource Impact Analysis

Proposed maximum depths are outlined in Table 3-2 that may result in impacting Paleontologically sensitive units. Additionally, as outlined further in Section 1.3 below the proposed project will result in Permanent Impacts should any Paleontological resources be encountered.

Table 3-2. Proposed Ground Disturbance (Excavation) for Project Elements

| Asset Type                                | Element (Quantities)                            | Measurements (Max Depths)                                         | PM Range         |
|-------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------|------------------|
| <b>ROADWAY IMPROVEMENTS</b>               |                                                 |                                                                   |                  |
| Pavement Rehabilitation                   | Rubberized Hot Mix Asphalt-Type G (RHMA-G)      | 22.98 miles (l) x 0.2 ft. (depth)                                 | 0.0/11.5*        |
| Pavement Rehabilitation                   | Upgrading and restoring existing loop detectors | Surface only                                                      | 0.0/11.5         |
| Pavement Rehabilitation                   | Upgrading existing pavement delineation         | Surface only                                                      | 0.0/11.5         |
| Drainage Rehabilitation                   | CIPP Lining; 3 PM locations                     | 45, 53, 70-ft. (l) x 12 to 24 in. (dia) x 18 in. to 6 ft. (depth) | 3.58; 4.26; 5.25 |
| Curve Warning Signs (CWS)                 | 54 curve warning signs; 27 PM locations         | 6 inches x 6 inches x 7 feet (width x length x depth)             | 5.41/8.18        |
| <b>TRAFFIC SAFETY DEVICE IMPROVEMENTS</b> |                                                 |                                                                   |                  |
| Metal Beam Guardrail System (MBGS)        | 2 existing MGS on Rte-74                        | 288 ft. (l) x < 1 ft. depths                                      | 10.4             |
| <b>COMPLETE STREET IMPROVEMENTS</b>       |                                                 |                                                                   |                  |
| Ladder Crosswalks                         | 5 locations                                     | Surface only (1,803 linear ft.)                                   | 0.0/3.0          |
| Adding 2-Feet Buffer                      | 1 location                                      | Surface only [2-ft (width x length)]                              | 1.9/2.8          |
| Adding Class II Bike Lane Symbols         | Multiple locations along SR-74                  | Surface only [Every 500- linear ft]                               | 1.9/2.8          |

\* Excluding the segments at PM 1.0/2.1 and PM 6.3/6.9

CIPP= Cure-in-Place Pipeliner

The Disturbed Soil Area (DSA) for the proposed project is anticipated to be less than 1.0 acre.

### 3.2.1 Proposed Project Paleontological Potential

Build Alternative improvements for the proposed project are anticipated to have a direct impact to potentially sensitive paleontological resources with the exception of Project-related excavations that would occur Santiago Volcanics, Very Young Quaternary Alluvium and Landslide Deposits (Qw, Qya, Qyf) as these deposits are not likely to encounter scientifically significant fossils because these deposits have no to low paleontological sensitivity. A full breakdown of Project elements, locations and Paleontological Assessments are detailed in the following activities below for the Build Alternative:

#### ROADWAY IMPROVEMENTS

**Pavement Rehabilitation.** Proposed activities for pavement rehabilitation include cold planning and overlaying existing asphalt concrete on general purpose (GP) lanes and shoulders at surface-levels and up to 0.2 ft. above-surface pavement for Rubberized Hot Mix Asphalt-Type G (RHMA-G). All work will be within the existing state ROW (PM 0.0/11.5) within a total lane-mile distance of 22.99 miles, excluding the segments at PM 1.0/2.1 and PM 6.3/6.9; Therefore, no native sediment will be impacted. *For this reason, pavement rehabilitation constructions will have no potential to impact to paleontological resources.*

**Drainage Rehabilitation.** Proposed activities for drainage rehabilitation include excavations at three (3) locations with maximum depths up to 6-ft. (Table 3.2.) Location 1 (PM 3.6) and Location 3 (PM 5.4) are located within Younger Holocene Alluvial deposits (Qls & Qya) and have little to no potential to impact paleontological resources (Figure 13 & 15). Location 2 (PM 4.2/4.3) is located within deposits of the Santiago Formation (Tss) that have been known to yield significant fossil resources (Figure 14). The literature review resulted in no known fossil localities in the immediate area of location 3. Field survey concluded that the Santiago unit sediments are present in the immediate construction footprint of the existing drainage, however the current construction footprint is highly disturbed from previous construction. *As proposed, only the drainage rehabilitation at PM 4.2/2.3, may have the potential to impact Paleontological resources.*

Table 3-3. Drainage Locations and Scopes of Work (Draft Project Report, July 2025)

|   | Location          | Dia. (Inch) | Length (Ft) | Scopes of Work |
|---|-------------------|-------------|-------------|----------------|
| 1 | SR-74; PM 3.6     | 18          | 45          | CIPP Lining    |
| 2 | SR-74; PM 4.2/4.3 | 18          | 70          | CIPP Lining    |
| 3 | SR-74; PM 5.4     | 24          | 53          | CIPP Lining    |

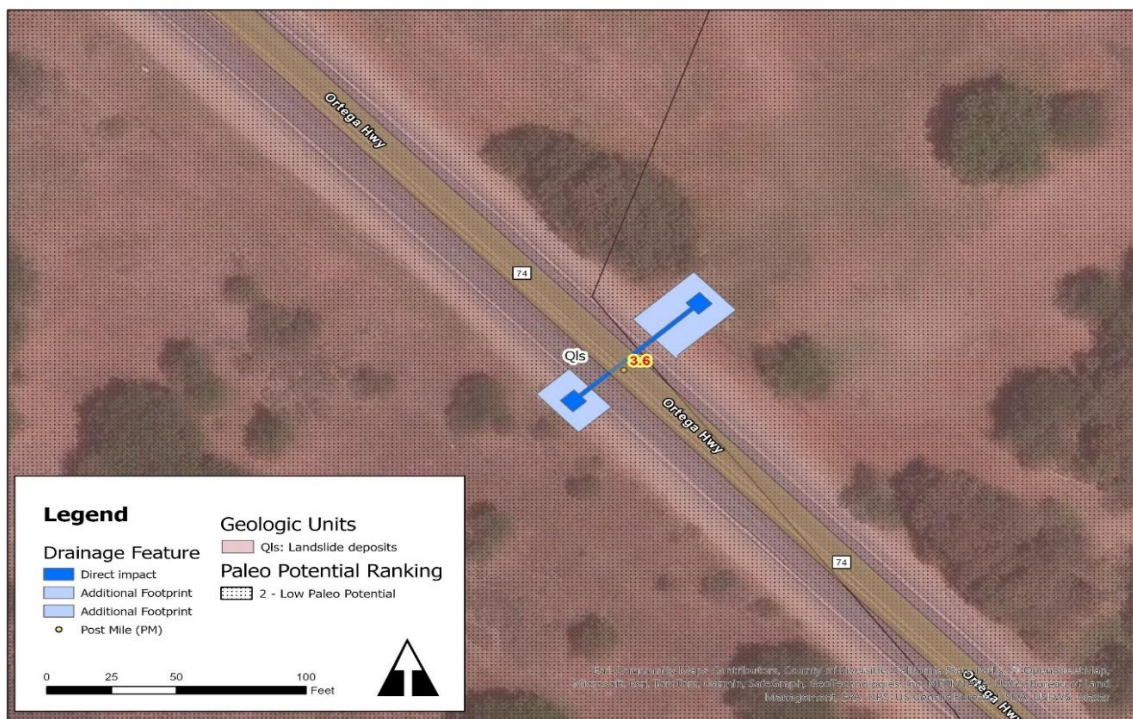


Figure 14. Drainage Location 1, PM 3.6/3.58.

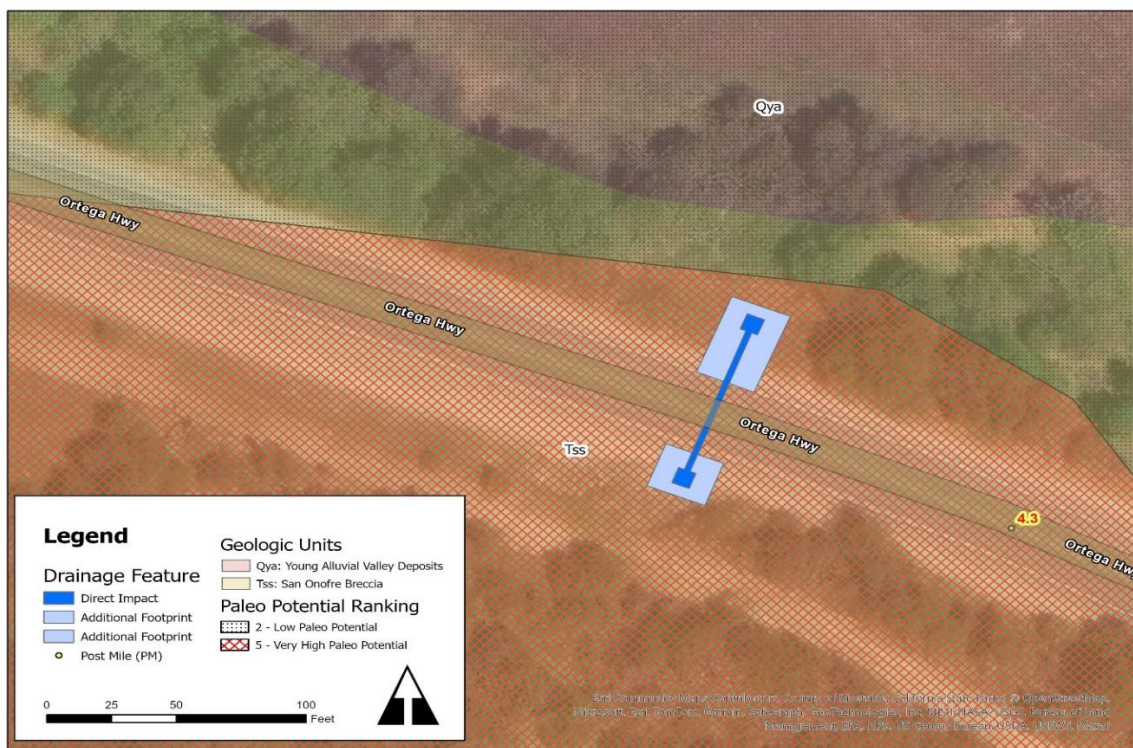


Figure 15. Drainage Location 2, PM 4.2/4.3



Figure 16. Drainage Location 3, PM 4.2/4.3

**Curve Warning Signs (CWS).** Proposed improvements for the addition of 54 CWS along SR 74 (PM 5.41/8.18) will be within geologic units of no to high potential. The total measurements for CWS installation are 6-inch x 6-inch x 6-ft (length x width x depth). While these locations may impact potentially sensitive units, the proposed construction methods for CWS are very minimal and highly destructive and they do not have the potential to result in any significant scientific discoveries. For this reason, *the additional of CWS as proposed will have no potential to impact to paleontological resources.*

## TRAFFIC SAFETY DEVICE IMPROVEMENT

**Metal Beam Guardrail System (MBGS).** Proposed improvements along the eastern most limits (San Juan Creek) of SR 74 (PM 10.41) will be within units of low potential at the eastern. MBGS will occur at two (2) locations for a total of 288-linear feet (175-ft EB; 113-ft WB) at shallow depths of less than 1 ft. within the existing road base, between PM 10.41 (EB)/10.46 (WB). *For this reason, the additional of MBGS as proposed will have no potential to impact to paleontological resources.*

## COMPLETE STREET IMPROVEMENT

**Upgrading Ladder Crosswalks.** Proposed improvements along SR 74 (PM 0.0/11.5) will be within geologic units of no to high potential. However, all construction related to ladder crosswalk will be surface pavement and have no impact to native soils. *For this reason, the addition of ladder crosswalks as proposed will have no potential to impact to paleontological resources.*

**Adding 2-Foot Buffer.** Proposed improvements along SR 74 adding a 2-foot buffer between the existing GP lane and the class II bike lane, PM 1.9/2.8. The existing bike lane on both directions will be restriped. All construction related to adding a 2-ft. buffer will be along the surface only and have no impact to native soils. *For this reason, the additional of 2-ft. buffer as proposed will have no potential to impact to paleontological resources.*

**Adding Class II Bike Lane Pavement Markings (Symbols).** Proposed improvements along SR 74 (PM 0.0/11.5) will along SR 74 (PM 0.0/11.5) will be within geologic units of no to high potential. However, all construction related to additional of bike lane symbols will be along the surface pavement only and have no impact to native soils. *For this reason, the addition of bike lane symbols as proposed will have no potential to impact to paleontological resources.*

### 3.2.2 Environmental Consequences

#### *Temporary Impacts*

**Build Alternative.** The construction of Build Alternative would not result in temporary impacts to paleontological resources because the impacts to those types of resources during construction would be considered permanent.

**No Build Alternative.** Under the No Build Alternative, none of the proposed improvements to State Route 74 (SR-74) would be constructed. The No Build Alternative would maintain the existing conditions; therefore, the No Build Alternative would not result in temporary adverse impacts related to paleontological resources as a result of construction activities.

#### *Permanent Impacts*

**Build Alternative.** The expected excavation depths for the various components of Build Alternative 2 range from as shallow as 2 inches for pavement rehabilitation to as deep as 6 ft for the drainage work along SR-74. The majority of the land within the project limits contains geologic units that have high paleontological sensitivity (e.g., the Young Axial Channel Deposits below a depth of 10 ft; the Old Axial Channel Deposits; the Capistrano Formation; and the Williams Formation). Based on the excavation depths of project components listed above, geologic units with high sensitivity would be impacted by excavation activities for Build Alternative 2 for drainage work only. As such,

development of Build Alternative 2 has the potential to impact scientifically significant, nonrenewable paleontological resources. However, implementation of Caltrans Standard and Specification for Paleontological Resources (14-7.03) would mitigate potential impacts to paleontological resources.

#### *No Build Alternative*

Under the No Build Alternative, none of the proposed improvements to SR-74 would be constructed. The No Build Alternative would maintain the existing conditions; therefore, the No Build Alternative would not result in permanent adverse impacts related to paleontological resources as a result of construction activities.

### **3.3 Data Gaps**

Subsurface potential and fossil locality data is subject to gaps in the geologic record that have occurred as a result from natural processes (i.e. unconformities in the project footprint subsurface) or historic (human) development made prior to the protection of paleontological resources (NEPA/CEQA 1970).

Furthermore, the current data and impacts were evaluated based on the scope of work and locations in the approved Project Initiation Report (April 2023). Should any changes to the scope of work occur, additional studies may be warranted and a re-assessment of this evaluation will be required to determine further potential impacts to Paleontological resources.

## Chapter 4 Recommendations

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### 4.1 Required Actions

As discussed above, the paleontological sensitivity associated with geological units that would affect the Project, as proposed, is considered *low to high*. However, because the potential to encounter scientifically significant paleontological resources has been determined to be low in the majority of the Project Area, the following avoidance, minimization and mitigation measures listed below will be incorporated during design and construction of the Build Alternative to mitigate permanent impacts to paleontological resources.

#### 4.1.1 Avoidance, Minimization and Mitigation Measures

##### ***Standard Specification 14-7: Paleontological Resources***

There is a potential for unanticipated paleontological resources to be unearthed during site preparation, grading, or excavation for Build Alternative. Those potential effects would be avoided or minimized through 14-7.03/04 below:

##### **14-7.03 Discovery of Unanticipated Paleontological Resources.**

If unanticipated paleontological resources are discovered at the job site, do not disturb the resource and immediately;

1. Stop all work within a 60-foot radius of the discovery
2. Secure the area
3. Notify the Project Engineer

Caltrans District 12 Archaeologist or Paleontologist will investigate the discovery and modify the dimensions of the secured area if needed. Do not move paleontological resources or take them from the job site. Do not resume work within the radius of the discovery until authorized.

##### **14-7.04 Paleontological Resource Mitigation**

Caltrans will inform the contractor that the Department is performing paleontological resource mitigation on this project and the following be implemented as follows:

1. Mandatory Paleontological Awareness Training (30 mins) conducted by District 12 Archaeologist or/Paleontologist, will be conducted prior to any construction work for all parties that will be onsite.

2. On-call paleontological monitoring by a qualified principal paleontologist in Paleontologically sensitive units; to be done in-house or through an A&E Task Order.

Permits will be as-needed pending a significant paleo find. Curation is not anticipated for this project; should any inadvertent discoveries be encountered a curation agreement may be retained at the time.

#### **4.1.2 Limitations**

Should the project plans change to include changes to the project footprint and locations or depths of ground disturbance, additional studies may be required to necessitate re-evaluation of impacts to paleontological resources. As paleontology resources are within the project vicinity but are not anticipated to be impacted by the project, any project scope changes will require a supplemental Paleontological Identification Report/Paleontological Evaluation Report to update this report's recommendation.

### **4.2 Resource Agency Coordination**

#### **4.2.1 Required Contacts**

No additional regulatory/land management agencies are required for paleontological services as all work will take place within the state ROW.

#### **4.2.2 Permits and Land Access**

As currently proposed, no permits or land access area required. Therefore, no permits or land access areas will be required for paleontological mitigation to proceed.

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# **APPENDIX A**

## **MAPS**

# **APPENDIX B**

## **PREPARER'S QUALIFICATIONS**

# **APPENDIX C**

## **FOSSIL LOCALITY SEARCH RESULTS**

# **APPENDIX D**

## **FIELD SURVEY FORMS**

# **APPENDIX E**

## **PRELIMINARY PROJECT PLANS & CROSS SECTIONS**

# **APPENDIX F**

## **TOPOGRAPHIC MAPS**