

2.11 Paleontology

2.11.1 Regulatory Setting

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

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

For example, 23 United States Code (USC) 1.9(a) requires that the use of federal-aid funds must be in conformity with all federal and state laws, and 23 USC 305 authorizes the appropriation and use of federal highway funds for paleontological salvage as necessary by the highway department of any state, in compliance with 16 USC 431-433 and state law.

Under California law, paleontological resources are protected by the California Environmental Quality Act (CEQA).

2.11.2 Affected Environment

This section is based on the *Paleontological Identification Report and Paleontological Evaluation Report* (PIR/PER) (April 2023).

A paleontological resource locality search for any known localities within and surrounding the project area was completed through the Natural History Museum of Los Angeles County (NHMLAC) and the San Diego Natural History Museum (SDNHM) in July 2022. The locality searches included a 1-mile buffer around the project area. Relevant geologic maps and geological and paleontological literature were also reviewed. A pedestrian survey of the Study Area was conducted on October 24, 25, and 26, 2022.

The Study Area is within the Peninsular Ranges Geomorphic Province, a large structural block that extends from the Transverse Ranges in the north to the tip of Baja California. Within this larger region, the proposed project is located in the Los Angeles Basin, which is a broad alluvial plain bounded by mountains to the north and east and the Pacific Ocean to the west and south.

Geologic mapping indicates the project area contains Very Young Wash Deposits; Young Alluvium, Unit 2; Young Alluvial Fan Deposits; and Young Axial Channel Deposits. Although not mapped, Artificial Fill is likely also present at the surface of the project area from the prior construction of Interstate (I) 5 and other roads. While

Artificial Fill may contain fossils, these fossils have been removed from their original location and are thus out of stratigraphic context. Therefore, they are not considered important for scientific study. As such, Artificial Fill has no paleontological sensitivity. Very Young Wash Deposits are mapped within the project area where the project crosses the Santa Ana River. Although these Very Young Wash Deposits can contain remains of plants and animals, not enough time has passed for the remains to have become fossilized. Therefore, the Very Young Wash Deposits are considered to have no paleontological sensitivity. The upper 10 feet of the Young Alluvium, Unit 2; Young Alluvial Fan Deposits; and Young Axial Channel Deposits are assigned a low paleontological sensitivity above a depth of 10 feet and a high sensitivity below that mark, given the sediments of the Young Alluvium, Unit 2; Young Alluvial Fan Deposits; and Young Axial Channel Deposits below a depth of 10 feet may be old enough to contain scientifically significant paleontological resources.

According to the fossil locality searches conducted by the NHMLAC and the SDNHM, there are no known fossil localities within the boundaries of the project. However, both museums have records of several fossil localities near the project from geologic units within or similar to those found within the project area, either at the surface or at depth.

The NHMLAC reports five fossil localities near the project from geologic units within or similar to those found within the project area. The closest of these, LACM VP 1652, is located on Rio Vista Avenue south of Lincoln Avenue in Anaheim from within an unknown Pleistocene formation and produced remains of sheep (*Ovis*). LACM VP 3, located in Richfield south of Yorba Linda, produced remains of elephant (Proboscidae), while LACM VP 3524, located north of Malvern Avenue and 0.5 mile west of Gilbert Street in Fullerton, produced remains of hooved mammal (Ungulata). Both localities come from within unknown Pleistocene formations. The locality search from the NHMLAC also noted a large number of vertebrate remains from the La Habra Formation, a geologic unit equivalent in age and depositional environment to the Young Alluvium, Unit 2; Young Alluvial Fan Deposits; and Young Axial Channel Deposits. From the La Habra Formation, the museum has localities LACM VP 4185-4201, located at Coyote Creek adjacent to Ralph B. Clark Regional Park, and LACM VP 3347, located at 11204 Bluefield Avenue in Whittier. These localities yielded remains of bison (*Bison*), camel (*Camelops*), horse (*Equus*), mammoth (*Mammuthus*), mastodon (*Mamut*), elephant clade (Proboscidea), dire wolf (*Canis dirus*), coyote (*Canis latrans*), deer (*Odocoileus*), dwarf pronghorn (*Capromeryx*), unidentified artiodactyl, and sea duck (*Chendytes*).

The SDNHM reports five localities near the proposed project, all located at the Anaheim Gardenwalk from within Pleistocene sediments. These localities yielded remains of estuarine oysters, freshwater invertebrates (e.g., freshwater snails and mussels), and terrestrial vertebrates (e.g., pocket mice, gophers).

The field survey was divided into three sections and conducted over 3 days. The first section consisted of the interchanges of all exits on I-5 between Valley View Boulevard and Brookhurst Street and the State Route (SR) 91 median between Valley View Boulevard and Harbor Boulevard. The second section of the survey consisted of interchanges of all exits on I-5 between Euclid Street and The City Drive. The third section of the survey consisted of interchanges of all exits on I-5 between the I-5/SR-57/SR-22 interchange and Newport Avenue. Also included were portions of the median on SR-55 from I-5 to Dyer Road and I-5 from Newport Avenue to Culver Drive.

A large majority of the project area is completely paved, obscuring any view of sediments. These areas largely consist of intersections, roads, and medians. There are also a number of landscaped areas and gores along the roads and intersections planted with grass or ice plant. While coverage by these forms of vegetation during the survey was extremely high, often to the point of total coverage, some areas provided small views of the underlying sediments.

All areas with exposed ground surface throughout the project area contained Artificial Fill, with no native sediments visible in any locations. No paleontological resources were observed during the field survey.

However, in the event that unanticipated paleontological resources are identified during construction, Project Feature PF-PAL-1 would be implemented to proceed accordingly.

PF-PAL-1: California Department of Transportation (Caltrans) Standard Specification 14-7.03: Discovery of Unanticipated Paleontological Resources. If unanticipated paleontological resources are discovered, all work within 60 feet of the discovery must cease and the construction Resident Engineer will be notified. Work cannot continue near the discovery until authorized.

2.11.3 Environmental Consequences

2.11.3.1 Temporary Impacts

Build Alternatives (Alternatives 2, 3, and 4)

The construction of the build alternatives would not result in temporary impacts to paleontological resources because the impacts to those types of resources during construction would be considered permanent, as described later in Section 2.11.3.2.

No Build Alternative (Alternative 1)

Under the No Build Alternative, none of the proposed improvements to I-5 would be constructed. Therefore, the No Build Alternative would not result in temporary impacts related to paleontological resources as a result of construction activities.

2.11.3.2 Permanent Impacts

Build Alternative (Alternative 2)

Alternative 2 would modify the existing high-occupancy vehicle (HOV) minimum-occupancy requirement from the existing two-plus (2+) to three-plus (3+) passengers between Red Hill Avenue and the Orange County/Los Angeles (OC/LA) County line and would add two new park-and-ride facilities. Due to the addition of the two park-and-ride facilities, ground disturbance associated with Alternative 2 is limited in aerial extent and depth, reaching a maximum depth of 5 ft, and would not reach deposits with high paleontological sensitivity. Therefore, Alternative 2 as proposed, would not result in permanent adverse impacts related to paleontological resources.

Build Alternatives (Alternatives 3 and 4)

The construction of Alternatives 3 and 4 would require ground disturbance, excavation, and modifications to existing freeway and local street facilities and structures. Specifically, if construction of either Alternative 3 or 4 requires excavation that extends more than 25 feet below the original ground surface, those activities could result in impacts to paleontological resources.

The new lanes, new shoulders, new and re-established auxiliary lanes, and ramps are expected to require excavation to depths of less than 5 feet below the original ground surface and would not have the potential to impact paleontological resources.

Excavation depths for undercrossings and overcrossings would vary by location and range from less than 5 feet to more than 100 feet for some cast-in-drilled-hole (CIDH) piles. Similarly, excavation depths for retaining walls and noise barriers would depend on the location and final design. As such, excavation for some of the undercrossings, overcrossings, retaining walls, and noise barriers may extend below a depth of 10 feet and have the potential to impact paleontological resources.

No Build Alternative (Alternative 1)

Under the No Build Alternative, none of the proposed improvements to I-5 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.

2.11.4 Avoidance, Minimization, and/or Mitigation Measures

In addition to PF-PAL-1 described above, the following measure PAL-1 serves as a minimization measure which will require the development of the Paleontological Mitigation Plan for the Project in order to ensure impacts to paleontological resources are less than significant:

PAL-1 Paleontological Mitigation Plan. A qualified paleontologist shall prepare a Paleontological Mitigation Plan (PMP) following the guidelines in the California Department of Transportation (Caltrans) Standard Environmental Reference (SER), Environmental Handbook, Volume 1, Chapter 8 – Paleontology (June 2016 or more current) and guidelines developed by the Society of Vertebrate Paleontology (SVP; 2010). The PMP shall be prepared concurrently with final design plans during the Plans, Specifications, and Estimates (PS&E) phase. Implementation of the PMP during Construction and post-Construction will reduce impacts to potential paleontological resources to less than significant. **SSP 14-7.04 for Paleontological resources mitigation.**

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