

IV. Environmental Impact Analysis

D. Geology and Soils (Paleontological Resources)

1. Introduction

This section of the Draft EIR provides an analysis of the Project's potential impacts to paleontological resources. The analysis is based on database research and a paleontological resources records search conducted for the Project by the Natural History Museum of Los Angeles County (Natural History Museum) and included in Appendix O of this Draft EIR. The Project's potential impacts related to the balance of the geology and soils issues identified in Appendix G of the CEQA Guidelines (e.g., faulting, seismicity, landslides, soil erosion, etc.) are evaluated in the Initial Study included as Appendix A.1 of this Draft EIR and were found to be less than significant without mitigation.

2. Environmental Setting

a. Regulatory Framework

(1) California Environmental Quality Act

Appendix G of the CEQA Guidelines provides guidance relative to impacts on paleontological resources. Appendix G of the CEQA Guidelines states that a project could have a potentially significant impact on the environment if it could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

(2) Los Angeles General Plan Conservation Element

Section 3 of the Los Angeles General Plan Conservation Element, adopted in September 2001, includes policies for the protection of paleontological resources. It is the City's policy that paleontological resources be protected for historical, cultural research, and/or educational purposes. Section 3 sets as an objective the identification and protection of significant paleontological sites and/or resources known to exist or that are identified during "land development, demolition, or property modification activities." Section 5 of the Conservation Element recognizes the City's responsibility for identifying and protecting its cultural and historical heritage. The Conservation Element establishes the policy to continue to protect historical and cultural sites and/or resources potentially

affected by proposed land development, demolition, or property modification activities, with the related objective to protect important cultural and historical sites and resources for historical, cultural, research, and community educational purposes.¹

b. Existing Conditions

According to the published geologic maps, the ground at the Project Site is mapped as late Pleistocene- to Holocene-age alluvial deposits along the eastern margin of the Project Site and Pliocene-age Fernando Formation sedimentary bedrock elsewhere. The Project Site is partially mantled by artificial fill materials consisting of sandy silt to clay varying from a thin veneer (less than 1 foot) in the upper portion of the Project Site to a thickness of more than 13 feet in the lower portion, adjacent to Hill Street. The earth materials encountered in the field investigation in Borings BA-1, CB-1, and CB-2 consisted of approximately 3 feet of fill, underlain by sedimentary bedrock consisting of sandy and clayey siltstone and silty sandstone of the Fernando formation. Fill soils, estimated to be 14 feet in thickness, were encountered in Boring RW-1. The fill consisted of sandy silt. Deeper fill may be encountered elsewhere at the Project Site due to prior construction or grading. Records are not currently available documenting the placement and compaction of the existing fill material within the Project Site. Alluvial deposits were encountered below the fill between depths of 14 and 25 feet below ground surface (bgs), consisting of silty sand and sand with gravel and some cobbles.²

The fill and alluvial deposits were underlain by sedimentary bedrock of the Fernando formation. The Fernando formation generally consists of oxidized and unoxidized, massive and poorly- to moderately-well bedded clayey and sandy siltstone and silty fine sandstone. Some thin clay seams were observed in the upper 20 feet of Boring CB-1 and lower 157 feet of Boring CB-2. Cemented layers up to 1 foot thick were also encountered. Overall, the formation is generally poorly cemented and weak to very weak, while cemented zones are strong to very strong. The bedrock is oxidized to a light brownish- to yellowish-gray color near the surface. The unoxidized bedrock is a dark greenish gray color.³

In a letter received from the Natural History Museum on July 24, 2018, a Project-specific paleontological records search was conducted through the Natural History

¹ *City of Los Angeles General Plan, Conservation Element, September 2001, pp. II-6 through II-9.*

² *Wood Environment & Infrastructure Solutions, Inc., Report of Preliminary Geotechnical Investigation (Geotechnical Services Phase A—Geotechnical Feasibility Evaluation) for the proposed Angels Landing Development, July 6, 2018 (revised March 11, 2019).*

³ *Wood Environment & Infrastructure Solutions, Inc., Report of Preliminary Geotechnical Investigation (Geotechnical Services Phase —Geotechnical Feasibility Evaluation) for the proposed Angels Landing Development, July 6, 2018 (revised March 11, 2019).*

Museum. The results of the paleontological resources records search, which are included in Appendix O of this Draft EIR, indicate no vertebrate fossil localities have been previously recorded within the Project Site. However, there are localities that have been recorded nearby from the same sedimentary deposits that occur at depths within the Project Site, as identified below.

As discussed in the paleontological records search from the Natural History Museum, portions of the Project Site and surrounding area are overlain by fill material which does not contain paleontological resources. However, surface deposits throughout the Project Site vicinity consist of younger Quaternary Alluvium derived as fluvial deposits from the flood plain of the Los Angeles River that currently flows in a concrete channel to the east. As provided by the Natural History Museum, the uppermost layers of these deposits typically do not contain significant fossil vertebrate remains, but the underlying older Quaternary Alluvium and bedrock (both marine Pliocene San Fernando formation and Miocene Puente Formation bedrock) in the Project vicinity may well contain vertebrate fossils.

As provided by the Natural History Museum, a series of vertebrate fossil localities were recorded in the vicinity of the Project Site. Specifically, LACM 4726 was recorded immediately southeast of the Project Site near the corner of 4th Street and Hill Street; LACM 7730 was recorded east-northeast of the Project Site near the intersection of Main Street and 2nd Street; LACM 6971 was recorded west of the Project Site near the corner of 6th Street and Flower Street; and LACM 3868 was recorded west-northwest of the Project Site north of 6th Street between Lucas Avenue and South Bixel Street. These nearby Fernando Formation localities have produced fossil specimens of stingray (*Dasyatis*), eagle ray (*Myliobatis*), skate (*Raja*), varied sharks, and baleen (*Balaenopteridae*) and toothed (*Odontoceti*) whales among other paleontological resources. Furthermore, north of the Project Site, between 2nd Street and 1st Street, are exposures of the marine late Miocene Yorba Member of the Puente Formation that the Natural History Museum has indicated has been a source of paleontological resources. LACM 5961, northeast of the Project Site and north of the intersection of Hill Street and 1st Street, produced a fossil specimen of bristlemouth fish, *Cyclothone*, during excavation of the Metro B and D Lines (formerly Red and Purple Lines, respectively) Civic Center/Grand Park Station rail station at an unknown depth. The next closest vertebrate fossil locality from the Puente Formation is LACM 7990, located northeast of the Project Site north of Temple Street between Broadway and Spring Street, which produced fossils including but not limited to slickheads (*Alepocephalidae*), deep sea smelts (*Bathylagidae*), viperfish (*Chauliodus*), cod (*Gadiformes*), mackerel (*Scombridae*), and dragonfish (*Stomiidae*).

The Project Site was extensively developed by the late nineteenth century. Historic aerials from 1948 show that the Project Site was developed with several buildings, and a parking lot. Between 1964-1972, the entirety of the Project Site as well as the entire block

directly to the west was razed and used to hold spoils pile from nearby construction. The Project Site is currently improved with an existing underground Metro station, which disturbed soils when it was constructed. The Project Site does not contain unique natural geologic features, such as natural hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, or wetlands. The surface condition of the Project Site is varied with unmaintained landscaping, including common trees and shrubs interspersed with barren patches of weedy grasses. The geological setting of the soils (below the surface conditions) is explained in the Initial Study, which found that there are no unique geologic conditions on the Project Site that would either result in significant impacts or otherwise preclude development of the Project.

3. Project Impacts

a. Thresholds of Significance

In accordance with the State CEQA Guidelines Appendix G, the Project would have a significant impact related to paleontological resources if it would:

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

For this analysis, the Appendix G Threshold listed above is relied upon. The analysis utilizes factors and considerations identified in the City's 2006 L.A. CEQA Thresholds Guide, as appropriate, to assist in answering the Appendix G Threshold question.

The L.A. CEQA Thresholds Guide identifies the following factors to evaluate paleontological resources:

- Whether, or the degree to which, the project might result in the permanent loss of, or loss of access to, a paleontological resource; and
- Whether the paleontological resource is of regional or statewide significance.

b. Methodology

To address potential impacts to paleontological resources, a formal records search was conducted by the Natural History Museum to assess the paleontological sensitivity of the Project Site and vicinity. In addition, an evaluation of existing conditions and previous disturbances within the Project Site, the geology of the Project Site, and the anticipated depths of grading were considered to determine the potential for uncovering paleontological resources.

Guidelines have also been established by the Society of Vertebrate Paleontology (SVP) for the identification, assessment, and mitigation of adverse impacts on nonrenewable paleontological resources. The SVP outlined criteria for screening the paleontological potential of rock units (High, Undetermined, Low) and established assessment and mitigation procedures tailored to such potential.

As defined by the SVP significant nonrenewable paleontological resources are:

Fossils and fossiliferous deposits here restricted to vertebrate fossils and their taphonomic and associated environmental indicators. This definition excludes invertebrate or paleobotanical fossils except when present within a given vertebrate assemblage. Certain invertebrate and plant fossils may be defined as significant by a project paleontologist, local paleontologist, specialists, or special interest groups, or by lead agencies or local governments.

As defined by the SVP, significant fossiliferous deposits are:

A rock unit or formation which contains significant nonrenewable paleontologic resources, here defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces, and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information (ichnites and trace fossils generated by vertebrate animals, e.g., trackways, or nests and middens which provide datable material and climatic information). Paleontologic resources are considered to be older than recorded history and/or older than 5,000 years BP [before present].

All identifiable vertebrate fossils are considered to have significant scientific value because vertebrate fossils are relatively uncommon, and only rarely will a fossil locality yield a statistically significant number of specimens of the same genus. Therefore, every vertebrate fossil found has the potential to provide significant new information on the taxon it represents, its paleoenvironment, and/or its distribution.

Fossils are contained within surficial sediments or bedrock, and are therefore not observable or detectable unless exposed by erosion or human activity. A geologic unit known to contain significant fossils is considered to be “sensitive” to adverse impacts if there is a high probability that earth-moving or ground-disturbing activities in that rock unit will either directly or indirectly disturb or destroy fossil remains.

In the absence of surface fossils, the assessment of rock unit sensitivity is based on the known potential to produce significant fossils elsewhere within the same geologic unit

(both within and outside of the study area), a similar geologic unit, or based on whether the unit in question was deposited in a type of environment that is known to be favorable for fossil preservation. Monitoring by experienced paleontologists greatly increases the probability that fossils will be discovered during ground-disturbing activities and that, if the fossils are significant, that successful mitigation and salvage efforts may be undertaken.

c. Project Design Features

No specific project design features are proposed with regard to paleontological resources.

d. Analysis of Project Impacts

Threshold (f): Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

(1) Impact Analysis

As previously discussed, a records search conducted for the Project Site indicates that no paleontological resources have been previously recorded at the Project Site. The paleontological records search indicates that the artificial fill at the Project Site does not have the potential to yield vertebrate fossils and that grading or very shallow excavations in the uppermost layers of soil and the overlying younger Quaternary Alluvium deposits in the Project Site are unlikely to discover significant vertebrate fossils. However, deeper excavations into the sedimentary layers and San Fernando Formation bedrock underlying the Project Site have the potential to encounter significant remains of fossil vertebrates.⁴ As discussed in Section II, Project Description, of this Draft EIR, the Project would result in excavations to a maximum depth of approximately 70 feet at the Project Site. Thus, the possibility exists that paleontological artifacts that were not recovered during prior construction and other human activity on the Project Site may be encountered during Project excavation activities.

Given that the paleontological records results identified a vertebrate fossil (LACM 4726) immediately southeast of the Project Site near the corner of 4th Street and Hill Street and in several other locations in the close vicinity, and the considerable 70-foot depth of proposed excavation for the Project which would extend below the existing fill at the Project

⁴ According to the Report of Preliminary Geotechnical Investigation for the Project prepared for the Initial Study and included as part of Appendix A.1 of this Draft EIR, Pleistocene- to Holocene-age alluvial deposits were encountered in borings below the artificial fill at the Project Site from between 14 and 25 feet below the ground surface, with San Fernando Formation bedrock encountered below the alluvium.

Site, the possibility exists that paleontological artifacts that were not recovered during prior construction or other human activity at the Project Site could be inadvertently encountered.

Accordingly, three mitigation measures are proposed to address the Project's potential impacts on paleontological resources and ensure that the Project grading and excavation activities would not result in a significant impact on paleontological resources, if any are encountered. GEO-MM-1 requires the retention of a Qualified Paleontologist and paleontological monitors meeting SVP requirements to observe Project grading/excavation activities and conduct other mitigation activities. GEO-MM-2 requires paleontological resources monitoring by a Qualified Paleontologist and/or paleontological monitors (meeting the standards of the SVP) of the deeper excavations into the sedimentary layers and San Fernando Formation bedrock underlying the Project Site. The Qualified Paleontologist shall have the authority to temporarily halt or divert work away from exposed fossils or potential fossils in the event such paleontological resources are encountered at the Project Site during construction or the course of any ground disturbance activities. At which time the Applicant would notify the City and consult with the Qualified Paleontologist to assess the significance of the find. The assessment would be done in accordance with the Society of Vertebrate Paleontology standards. If any find were determined to be significant, appropriate avoidance measures recommended by the consultant and approved by the City would be followed unless avoidance is determined to be unnecessary or infeasible by the City. If avoidance was determined to be unnecessary or infeasible, other appropriate measures (e.g., data recovery, excavation) would be instituted. GEO-MM-3 requires that any significant fossils collected during project-related excavations be prepared to the point of identification and curated into an accredited repository with retrievable storage. **With the implementation of mitigation measures GEO-MM-1 through GEO-MM-3, the Project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, and impacts would be less than significant.**

(b) Unique Geologic Features

There are no unique geologic features on the Project Site – the Project Site has been previously disturbed/developed and does not contain unique geologic features (e.g., geologic rock formations, bluffs, rock outcropping, etc.). In addition, the properties surrounding the Project Site are fully developed with urban uses. As a result, there are no unique geologic features that the Project could impact. **Therefore, the Project would not directly or indirectly destroy a unique geologic feature, and impacts to unique geologic features would be less than significant.**

(2) Mitigation Measures

The following mitigation measures are proposed to reduce impacts to paleontological resources:

GEO-MM-1: A Qualified Paleontologist meeting the Society of Vertebrate Paleontology (SVP) Standards (SVP, 2010) (Qualified Paleontologist) shall be retained prior to the approval of demolition or grading permits. The Qualified Paleontologist shall provide technical and compliance oversight of all work as it relates to paleontological resources, shall attend the Project kick-off meeting, and Project progress meetings on a regular basis, and shall be responsible for monitoring and overseeing paleontological monitors (meeting SVP standards) that will observe Project grading and excavation activities.

GEO-MM-2: Paleontological resources monitoring shall be conducted for all deeper excavations below the artificial fill Quaternary Alluvium deposits and into the sedimentary layers and San Fernando Formation bedrock underlying the Project Site. However, depending on the conditions encountered, full-time monitoring within these layers/bedrock can be reduced to part-time inspections or ceased entirely if determined appropriate by the Qualified Paleontologist. The Qualified Paleontologist shall inspect the grading and excavation activities along with the paleontological monitors on a regular basis, and shall recommend whether the depth of required monitoring should be revised based on his/her observations. The Qualified Paleontologist and/or paleontological monitors shall prepare daily logs detailing the types of activities and soils observed, and any discoveries.

The Qualified Paleontologist shall have the authority to temporarily halt or divert work away from exposed fossils or potential fossils in the event such paleontological resources are encountered at the Project Site during construction or the course of any ground disturbance activities. If paleontological resources are encountered, the Applicant shall notify the City and consult with the Qualified Paleontologist to assess the significance of the find. The assessment shall be prepared in accordance with Society of Vertebrate Paleontology standards. If any find are determined to be significant, appropriate avoidance measures recommended by the consultant and approved by the City shall be followed unless avoidance is determined to be unnecessary or infeasible by the City. If avoidance is determined to be unnecessary or infeasible, other appropriate measures (e.g., data recovery, excavation) shall be instituted.

GEO-MM-3: Any significant fossils collected during project-related excavations shall be prepared to the point of identification and curated into an accredited repository with retrievable storage. The Qualified Paleontologist shall prepare a final monitoring and mitigation report for submittal to the City

in order to document the results of the monitoring effort and any discoveries. If there are significant discoveries, fossil locality information and final disposition will be included with the final report which will be submitted to the appropriate repository and the City.

(3) Level of Significance After Mitigation

Impacts to paleontological resources would be less than significant with the implementation of GEO-MM-1 through GEO-MM-3.

e. Cumulative Impacts

(1) Impact Analysis

Impacts to paleontological resources are generally site-specific since the potential for discovery of such resources relate to the particular underlying conditions of a specific site. Also, the Project vicinity is highly urbanized and has been substantially disturbed and developed over time. In addition, while the paleontological records search indicates that a vertebrate fossil (LACM 4726) was recorded immediately southeast of the Project Site near the corner of 4th Street and Hill Street and in several other locations in the general vicinity, and while this suggests that one or more of the related Projects could impact paleontological resources, the Project would not contribute to any such impacts. This is because the Project would not include excavation/grading activities on adjacent properties (e.g., no combined impacts would occur), and would not result in significant Project-level impacts to paleontological with implementation of the proposed mitigation. Furthermore, as part of the environmental review processes for the related projects, which are farther away from the Project Site, record searches with the Natural History Museum and/or other site-specific technical analyses would be conducted that would identify the potential for discovery of paleontological resources. If there would be a potential for the discovery of paleontological resources within a related project site, that related project would be subject to the City's standard Condition of Approval for the inadvertent discovery of paleontological resources or other site-specific mitigation measures (like the Project) that would be established to address the potential for uncovering of paleontological resources. **Therefore, the Project would not contribute considerably to cumulative impacts to paleontological resources, and cumulative impacts to paleontological resources would be less than significant.**

(2) Mitigation Measures

Cumulative impacts to paleontological resources would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Cumulative impacts to paleontological resources were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.