Appendix E

Paleontology Technical Report

Paleontological Resources Assessment for the 6000 Hollywood Boulevard Project, Los Angeles, California

JUNE 2023

PREPARED FOR

Eyestone Environmental

PREPARED BY

SWCA Environmental Consultants

PALEONTOLOGICAL RESOURCES ASSESSMENT FOR THE 6000 HOLLYWOOD BOULEVARD PROJECT, LOS ANGELES, CALIFORNIA

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EXECUTIVE SUMMARY

Purpose and Scope: Eyestone Environmental retained SWCA Environmental Consultants (SWCA) to conduct a paleontological resources assessment in support of the proposed 6000 Hollywood Boulevard Project (Project) in the city of Los Angeles, California (Figure 1). The Project applicant proposes to demolish all existing structures and to construct a new mixed-use development. As the lead agency under the California Environmental Quality Act (CEQA), the City of Los Angeles (City) Department of City Planning (City Planning) requires the assessment of potentially significant impacts to the environment caused by construction or implementation of the Project. Therefore, SWCA has prepared this paleontological resources assessment for the proposed Project to summarize the results of a review of geologic maps, scientific literature, confidential fossil locality records from the Natural History Museum of Los Angeles County (NHMLA), and other site-specific relevant information. This report also includes a discussion of potential impacts to scientifically significant paleontological resources and mitigation recommendations to reduce potential impacts to less-than-significant levels, pursuant to CEQA.

Date of Investigation: SWCA reviewed the relevant maps and scientific literature in March 2023. The museum records search request was submitted to the NHMLA on April 10, 2023, and the results were received on April 16, 2023.

Summary of Findings: SWCA reviewed geologic maps, scientific literature, museum records, and other relevant information to determine the potential for adverse impacts to significant paleontological resources. According to geologic mapping by Campbell and others (2014), the surface of the Project Site is mapped as late Pleistocene old fan deposits, Unit 4 (Qof_4). Additionally, the results of the 2023 geotechnical study by Langan Engineering and Environmental Services, Inc. (Langan) indicate that the uppermost "native" strata of these geologic units were likely partially replaced by unmapped recent artificial fill to depths of approximately 11 feet below ground surface (bgs). No fossil localities have been identified from within the bounds of the Project Site, but several fossil localities have been recorded in the vicinity from the same geologic units as those present within the Project Site. Based on the results of this assessment, unmapped recent artificial fill has a low paleontological sensitivity but is underlain by late Pleistocene old fan deposits, Unit 4 (Qof_4) that has a high paleontological sensitivity. The maximum depth of ground-disturbing activities for the Project is anticipated to be as much as 40 feet bgs for the three-level subterranean garage. Therefore, ground-disturbing activities in previously undisturbed sediments (i.e., not artificial fill) greater than 11 feet bgs may result in potentially significant impacts to important or unique paleontological resources. Any significant fossils encountered during ground disturbances in previously undisturbed sediments at this depth threshold, or in any geologic unit present at depth noted to have a high paleontological sensitivity, would be at risk for damage or destruction from construction activities, which would constitute a significant impact under CEQA.

Recommendations: SWCA recommends the following mitigation measures to reduce potential significant impacts to less-than-significant levels, pursuant to CEQA. These recommended mitigation measures have been developed in accordance with and incorporate the performance standards of the Society of Vertebrate Paleontology (SVP), state and local regulations, and best practices in mitigation paleontology: 1) retain a Qualified Paleontologist who meets or exceeds the SVP (2010) qualification standards and who will obtain a curation agreement with an accredited repository before the start of construction activities; 2) conduct a Worker Environmental Awareness Program (WEAP) training to educate the construction crew on the legal requirements and procedures to follow in the event of an unanticipated fossil discovery; 3) have an SVP-qualified paleontological monitor conduct full-time paleontological monitoring during ground-disturbing activities 11 feet bgs or greater that have the potential to impact previously undisturbed sediments of high paleontological sensitivity (earthwork less than or equal to 11 feet bgs, or earthwork impacting only previously disturbed sediments or recent artificial fill should not be monitored regardless of depth); and 4) prepare a paleontological resources

monitoring report upon the conclusion of ground-disturbing activities to document the paleontological monitoring efforts for the Project and describe any paleontological resources discoveries observed and/or recorded during the construction of the Project. If paleontological resources are curated, the final monitoring report and any associated data pertinent to the curated specimen(s) should be submitted to the designated repository. A copy of the final monitoring report should be filed with City Planning.

Disposition of Data: This report will remain on file with the Project applicant, City Planning, and SWCA's Pasadena, California, office.

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INTRODUCTION

Eyestone Environmental retained SWCA Environmental Consultants (SWCA) to conduct a paleontological resources assessment in support of the proposed 6000 Hollywood Boulevard Project (Project) in the city of Los Angeles, California (Figure 1). The Project applicant proposes to demolish all existing structures and to construct a new mixed-use development. As the lead agency under the California Environmental Quality Act (CEQA), the City of Los Angeles (City) Department of City Planning (City Planning) requires the assessment of potentially significant impacts to the environment caused by construction or implementation of the Project. Therefore, SWCA has prepared this paleontological resources assessment for the proposed Project to summarize the results of a review of geologic maps, scientific literature, confidential fossil locality records from the Natural History Museum of Los Angeles County (NHMLA), and other site-specific relevant information. This report also includes a discussion of potential impacts to scientifically significant paleontological resources and mitigation recommendations to reduce potential impacts to less-than-significant levels, pursuant to CEQA. This assessment follows the guidelines of the Society of Vertebrate Paleontology (SVP) and best practices in mitigation paleontology (Murphey et al. 2019; SVP 2010).

SWCA Staff Paleontologist Jasmyn Nolasco, M.S., conducted the research for this paleontological resources assessment presented herein and was the primary author of this report. SWCA Paleontology Team Lead Mathew Carson, M.S., reviewed this report for technical quality assurance/quality control. SWCA Archaeologist Erica Nicolay, M.A., managed the overall project. Figures were generated by SWCA Geographic Information Systems (GIS) Specialist Marty Kooistra, M.A. Copies of the report are on file with SWCA's Pasadena, California, office.

PROJECT DESCRIPTION AND LOCATION

The Project applicant proposes to demolish all existing structures and to construct a new mixed-use development on a 163,327-square-foot (3.75-acre) site comprised of nine lots south of Hollywood Boulevard (Hollywood Lot) and one adjoining lot along Carlton Way between Bronson Avenue to the east and Gower Street to the west (Carlton Lot). The Hollywood Lot and the Carlton Lot are collectively referred to herein as the Project Site. The Project Site is located at 5950–6048 Hollywood Boulevard and 6037 West Carlton Way within the Hollywood Community Plan Area of the city of Los Angeles and overall bounded by Hollywood Boulevard on the north, Bronson Avenue on the east, Carlton Way on the south, and Gower Street on the west (i.e., herein collectively referred to as the Project Site) (Figure 2). The Project Site encompasses the following assessor's parcel numbers (APN): 5545-005-005, 5545-005-022, and 5545-006-029 and is located in Section 11, Township 1 South, Range 14 West, as depicted on the U.S. Geological Survey (USGS) Hollywood, California, 7.5-minute quadrangle (Figure 3).

The Project would include 342,643 square feet of residential uses (350 units), 136,000 square feet of commercial office uses, and 22,542 square feet of retail uses, including 18,004 square feet of retail, 4,038 square feet of restaurant uses, and 500 square feet of support uses. The Project would remove 31,833 square feet of existing commercial uses and parking. The proposed uses would be provided within a 35-story residential building, a six-story office building, and 11 townhome style structures, which would all be atop a parking podium and be located along Hollywood Boulevard. Additional residential uses would be provided within a four-story residential building located along Carlton Way, which would contain 46 units. The Project would include a total of 894 parking spaces within three subterranean parking levels

Figure 1. Project Site vicinity.

Figure 2. Project Site located on 2022 aerial base map.

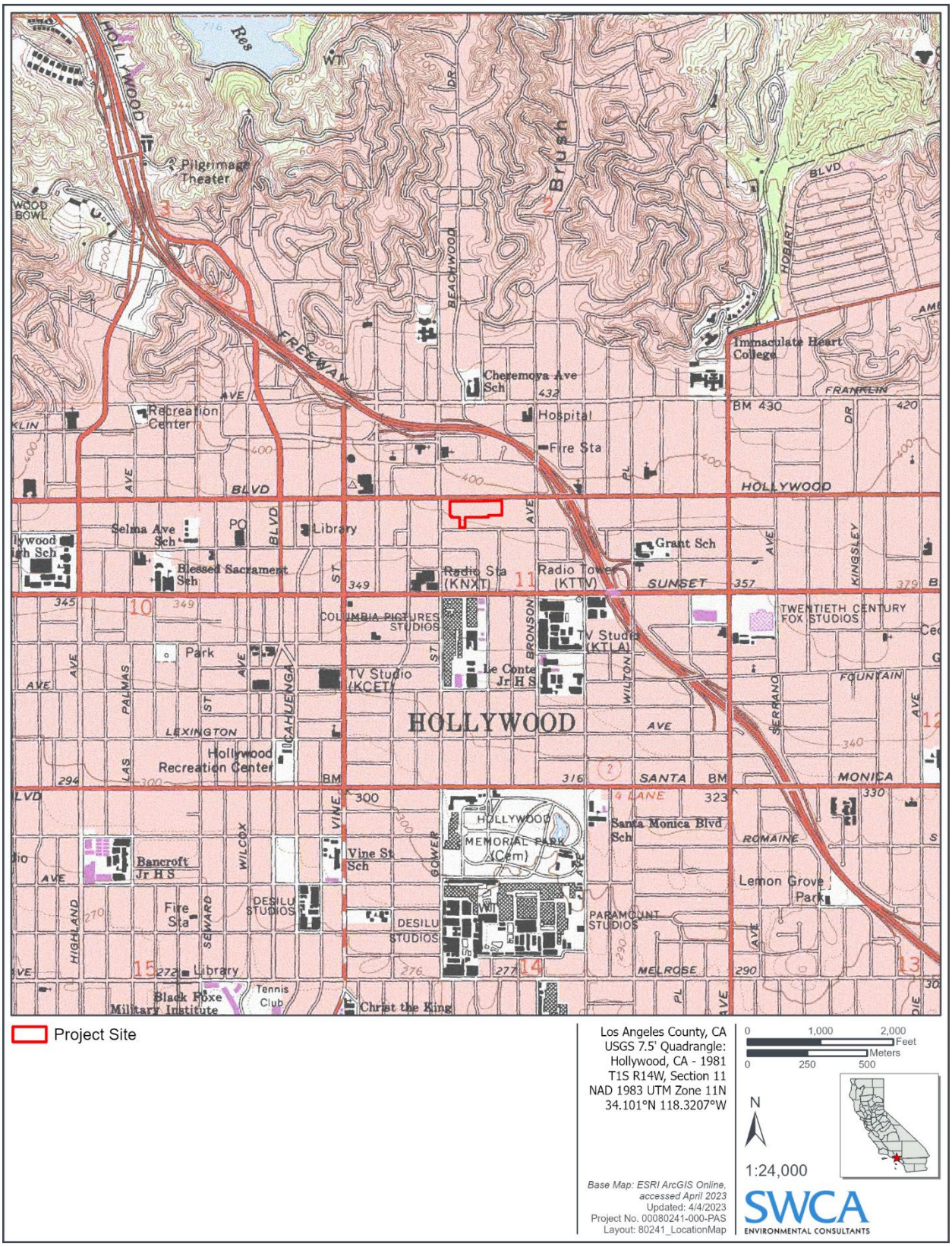

Figure 3. Project Site located on Hollywood, California, U.S. Geological Survey 7.5-minute topographic base map.

that would extend to a maximum depth of 40 feet below ground surface (bgs). The Project would include a total of 42,602 square feet of open space, including 23,526 square feet of publicly accessible privately owned open space, and 19,076 square feet of private open space. Upon completion, the Project would comprise a total floor area of 501,185 square feet with an overall floor area ratio (FAR) of 3.08:1.

PROFESSIONAL STANDARDS

The SVP has established standard guidelines that outline professional protocols and practices for conducting paleontological resource assessments and surveys; monitoring and mitigation; data and fossil recovery; sampling procedures; and specimen preparation, identification, analysis, and curation (SVP 1995, 2010). Most practicing professional mitigation paleontologists in California adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically provided in its standard guidelines. Most state regulatory agencies with paleontological laws, ordinances, regulations, and standards accept and use the professional standards set forth by the SVP.

As defined by the SVP, significant paleontological resources are

> fossils and fossiliferous deposits, here defined as 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. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years). (SVP 2010:11)

Numerous paleontological studies have developed criteria for the assessment of significance for fossil discoveries (e.g., Eisentraut and Cooper 2002; Murphey et al. 2019; Scott and Springer 2003). In general, these studies assess fossils as significant if one or more of the following criteria apply:

1. The fossils provide information on the evolutionary relationships and developmental trends among organisms, living or extinct.
2. The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein.
3. The fossils provide data regarding the development of biological communities or interaction between paleobotanical and paleozoological biotas.
4. The fossils demonstrate unusual or spectacular circumstances in the history of life.
5. The fossils are in short supply and/or are in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation and are not found in other geographic locations.

Geologic units known to preserve significant fossils or fossil localities are likely to contain additional undiscovered and potentially significant fossils and are generally considered sensitive for paleontological resources throughout their areal and stratigraphic extent. The extent of sensitivity differs from that defined for archaeological resource sites as follows:

> It is extremely important to distinguish between archaeological and paleontological (fossil) resources when defining the sensitivity of rock units. The boundaries of an archaeological site define the areal/geographic extent of an archaeological resource, which is generally independent from the rock unit on which it sits. However, paleontological sites indicate that the containing

> rock unit or formation is fossiliferous. Therefore, the limits of the entire rock unit, both areal and stratigraphic, define the extent of the paleontological potential. (SVP 2010:2)

Many archaeological sites contain features visually detectable on the surface. In contrast, fossils may be present at the surface or at depth within sediments or bedrock. Subsurficial fossils would not be observable or detectable unless exposed by erosion or human activity. In the case of human activity, such as project-related ground disturbances within geologic units with a high probability to yield significant fossils, direct or indirect adverse impacts to significant fossils may occur.

In summary, paleontologists cannot know either the quality or quantity of fossils before natural erosion or anthropogenic exposure. As a result, even in the absence of fossils on the surface, it is necessary to assess the sensitivity of geologic units based on their known potential to produce significant fossils elsewhere within the same geologic unit (both within and outside the study area), a similar geologic unit, and whether the unit in question was deposited in a type of environment 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, if such fossils are determined to be potentially significant, successful mitigation and salvage efforts may be undertaken to prevent adverse impacts to these resources.

REGULATORY SETTING

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value and are afforded protection under state and local laws and regulations.

State Regulations

California Environmental Quality Act

CEQA is the principal statute governing environmental review of projects occurring in the state and is codified at California Public Resources Code (PRC) Section 21000 et seq. CEQA requires lead agencies to determine whether a proposed project would have a significant effect on the environment, including significant effects on paleontological resources. Guidelines for the Implementation of CEQA, as amended December 28, 2018 (Title 14, Chapter 3, California Code of Regulations 15000 et seq.) (CEQA Guidelines), defines procedures, types of activities, persons, and public agencies required to comply with CEQA. Section VII(f) of the Environmental Checklist (CEQA Guidelines: Appendix G) asks whether a project would directly or indirectly destroy a unique paleontological resource and result in impacts to the environment.

Public Resources Code Section 5097.5

Requirements for paleontological resource management are included in PRC Division 5, Chapter 1.7, Section 5097.5, which 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.

These statutes prohibit the removal, without permission, of any paleontological site or feature from land under the jurisdiction of the state or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, local agencies are required to comply with PRC Section 5097.5 for their own activities, including construction and maintenance, as well as for permit actions (e.g., encroachment permits) undertaken by others. PRC Section 5097.5 also establishes the removal of paleontological resources as a misdemeanor and requires reasonable mitigation of adverse impacts to paleontological resources from developments on public (state, county, city, and district) land.

Local Regulations

City of Los Angeles General Plan

Section 3 (Archaeological and Paleontological) of the *City of Los Angeles General Plan Conservation Element* (Conservation Element) recognizes paleontological resources (page II-3) and contains an objective (page II-5) to protect the City's archaeological and paleontological resources for historical, cultural, research, and/or educational purposes (City of Los Angeles 2001). The Conservation Element includes the policy to "continue to identify and protect significant archaeological and paleontological sites and/or resources known to exist or that are identified during land development, demolition or property modification activities." The Conservation Element also states the following:

> Pursuant to CEQA, if a land development project is within a potentially significant paleontological area, the developer is required to contact a bona fide paleontologist to arrange for assessment of the potential impact and mitigation of potential disruption of or damage to the site. If significant paleontological resources are uncovered during project execution, authorities are to be notified and the designated paleontologist may order excavations stopped, within reasonable time limits, to enable assessment, removal or protection of the resources. (City of Los Angeles 2001:II-5)

Section D:1 of the *L.A. CEQA Thresholds Guide* (City of Los Angeles 2006) specifies that the determination of significance for paleontological resources shall be made on a case-by-case basis, taking into consideration the following factors:

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

METHODS

The following sections present an overview of the methodology used to analyze the potential for paleontological resources within the Project Site. This report conforms to industry standards as developed by the SVP (1995, 2010) and best practices in mitigation paleontology (Murphey et al. 2019).
The purpose of this assessment is to: 1) determine whether any previously recorded fossil localities occur in the Project Site at the surface or at depth; 2) if so, assess the potential for disturbance of these localities during construction; 3) evaluate the paleontological potential of the Project Site; and 4) evaluate the potential for previously undiscovered significant paleontological resources that could be present within the Project Site and potentially significantly impacted by implementation or construction of the Project.

Existing Data Analysis

SWCA conducted an analysis of available existing data pertinent to paleontological resources. This analysis included a review of geologic maps, scientific literature, museum records search results, and other relevant information, such as the 2023 Preliminary Geotechnical Report by Langan Engineering and Environmental Services, Inc. (Langan). The geologic mapping used in this analysis is from Campbell and others (2014) at a scale of 1:100,000. The museum records search request was submitted to the NHMLA on April 10, 2023, and the results of the museum records search were received on April 16, 2023, and incorporated into the results section of this report. Appendix A (confidential) provides a copy of the museum records search results.

Paleontological Potential Classification

Paleontological potential ("sensitivity") is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. In *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources* (SVP 2010:1–2), the SVP defines four categories of paleontological sensitivity for rock units: high, low, undetermined, and no potential:

> **High Potential**. Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Rocks units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcaniclastic formations (e.g., ash or tephra), and some low-grade metamorphic rocks which contain significant paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils (e.g., middle Holocene and older, fine-grained fluvial sandstone, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstone, fine-grained marine sandstone, etc.). Paleontological potential consists of both a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils and b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data. Rock units which contain potentially datable organic remains older than late Holocene, including deposits associated with animal nests or middens, and rock units which may contain new vertebrate deposits, traces, or trackways are also classified as having high potential.
>
> **Low Potential**. Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some rock units have low potential for yielding significant fossils. Such rock units will be poorly represented by fossil specimens in institutional collections or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule, e.g., basalt flows or Recent colluvium. Rock units with low potential typically will not require impact mitigation measures to protect fossils.
>
> **Undetermined Potential**. Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine if these rock units have high or low potential to contain significant paleontological resources. A field survey by a qualified

professional paleontologist to specifically determine the paleontological resource potential of these rock units is required before a paleontological resource impact mitigation program can be developed. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically excavations into subsurface stratigraphy.

No Potential. Some rock units have no potential to contain significant paleontological resources, for instance high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Rock units with no potential require no protection or impact mitigation measures relative to paleontological resources. (SVP 2010:1–2)

RESULTS

Regional Geology

The Project Site is within the Los Angeles Basin between the northernmost portion of the Peninsular Ranges and the south end of the Transverse Ranges. The Project Site is within the northernmost Central Block of the Los Angeles Basin, which includes the low portions of the Los Angeles coastal plain from Beverly Hills to the Downey Plain within central Orange County (Norris and Webb 1990; Yerkes et al. 1965). More specifically, the Central Block is bounded by the Hollywood, Santa Monica, and Whittier faults on the north; the Whittier and Elsinore faults and Elysian and Repetto hills on the east; the San Joaquin Hills and Huntington and Newport mesas on the south; and the Newport-Inglewood Fault Zone and Dominguez and Baldwin Hills on the west (Yerkes et al. 1965).

Within the Central Block, sedimentary strata overlying basement rocks consist of mostly marine and nonmarine sedimentary rocks, with the geologic history of the strata spanning from the Cretaceous to the Pleistocene (Norris and Webb 1990; Yerkes et al. 1965). Beginning in the Cretaceous and early Paleogene, western North America was the site of a convergent margin where the Farallon Plate was actively subducting eastward beneath the North American Plate. Subduction continued throughout the Paleogene, but by the late Oligocene (i.e., latest Paleogene), a portion of the East Pacific Rise collided with the subduction zone initiating the development of the San Andreas Fault system (Saucedo et al. 2016). The Los Angeles Basin formed when fault-bound blocks of the Transverse Ranges were translated and rotated away from the Peninsular Ranges because of movement along the San Andreas Fault system, with subsidence within the early Los Angeles Basin occurring during the middle to late Miocene (Critelli et al. 1995). Transtensional rifting that resulted in the formation of the Los Angeles Basin continued to enlarge the basin through the Pliocene, allowing the deposition of thick shallow marine strata (Olson 2007). By the Pleistocene, changes in global sea level, tectonic subsidence, and rates of sedimentation resulted in the deposition of thick accumulations (maximum thickness of 35,000 feet thick) of coastal and terrestrial alluvial deposits within the Los Angeles Basin (Yerkes et al. 1965). Erosion and transportation of sediments away from the surrounding uplifted blocks (i.e., the San Gabriel Mountains and Santa Ana Mountains) resulted in continued basin infilling during the late Pleistocene and Holocene. Today, thick alluvial deposits of the Pleistocene and Holocene within the Los Angeles Basin have yielded some of the best fossil sites in North America.

Local Geology and Paleontology

According to geologic mapping by Campbell and others (2014), the surface of the Project Site is mapped as late Pleistocene old fan deposits, Unit 4 (Qof_4) (Figure 4); however, based on previous site development during construction of the existing structures (see Figure 2) and the results of the

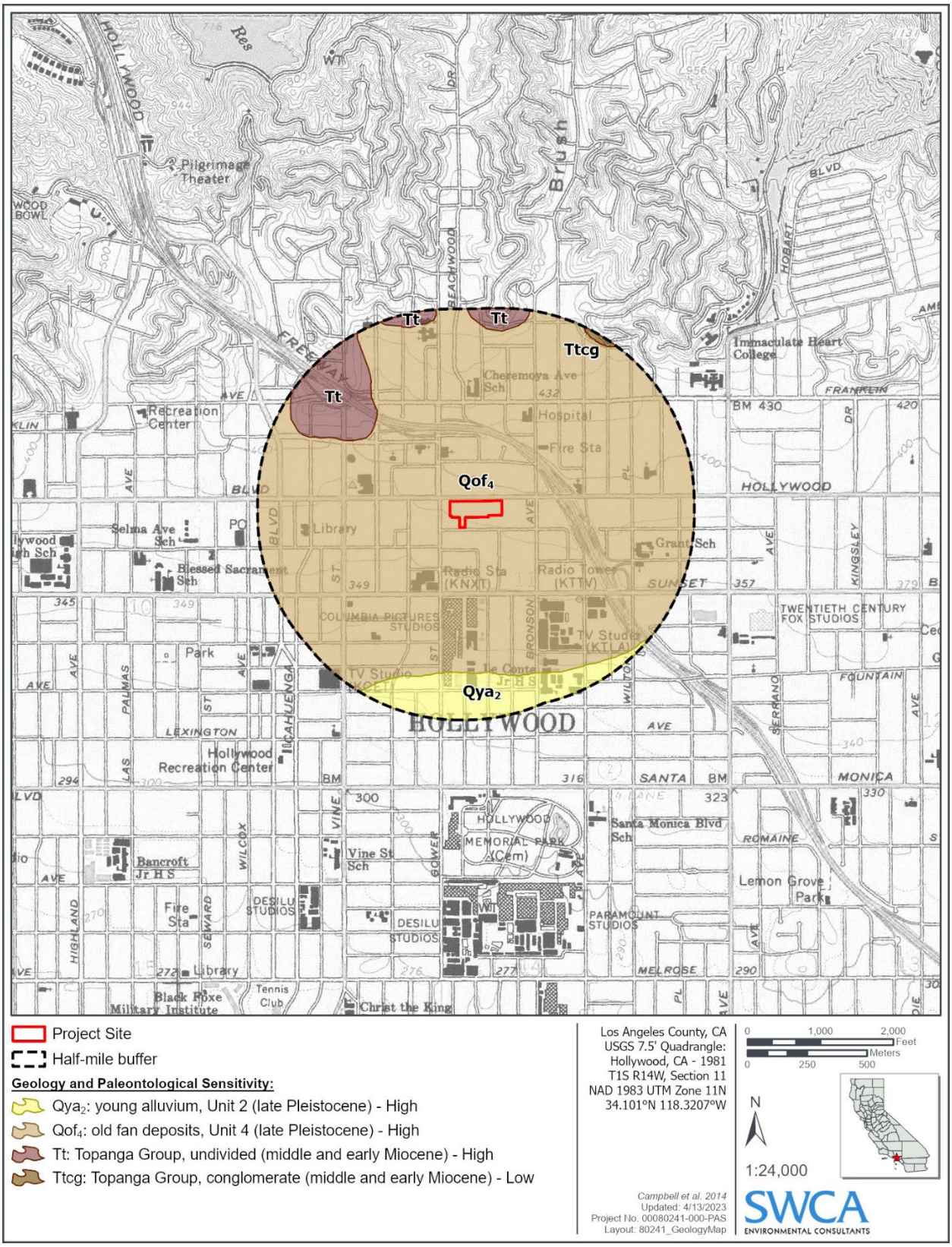

Figure 4. Geologic units and paleontological sensitivity within the project site and half-mile buffer.

preliminary geotechnical investigation (Langan 2023), the Project Site also contains unmapped recent artificial fill overlying "native" sedimentary deposits.

In general, geologic units mapped at the surface near the Project Site (i.e., within a 0.5-mile buffer) can be a good indicator of the geologic units that may be present in the subsurface, provided that structural deformation has not altered or displaced the vertical or lateral continuity of the units and that the geologic units are in their original geochronological order (relatively young deposits overlying relatively old deposits based on the principles of stratigraphy). Late Pleistocene young alluvium, Unit 2 (Qya_2) is mapped at the surface by Campbell and others (2014) approximately 0.40 mile south of the Project Site's southern boundary (see Figure 4). It is geochronologically younger than the late Pleistocene old fan deposits, Unit 4 (Qof_4) and unlikely to be in the Project Site considering the level of previous site disturbance. Additionally, exposures of the middle and early Miocene Topanga Group (both undivided [Tt] and conglomerate [Ttcg] subunits) are mapped 0.40 mile to 0.45 mile northwest, north, and northeast of the Project Site along the foothills (Campbell et al. 2014) (see Figure 4). Here, exposures of the Topanga Group (Tt and Tcg) are likely the result of uplift along the Hollywood Fault and were not noted during geotechnical investigation (Langan 2023). Therefore, the late Pleistocene young alluvium, Unit 2 (Qya_2) and Miocene Topanga Group (Tt and Tcg) are unlikely to be within the Project Site and are not discussed further in this report.

Therefore, only recent artificial fill and late Pleistocene old fan deposits, Unit 4 (Qof_4) are given consideration in this paleontological resources assessment. These geologic units are described in geochronological order (youngest to oldest) below.

Recent Artificial Fill

Although not mapped at the surface by Campbell and others (2014), unmapped recent artificial fill is present at the surface of the Project Site based on the results of the geotechnical investigation by Langan (2023). Here, artificial fill likely partially replaces the uppermost strata of "native" sediments of late Pleistocene old fan deposits, Unit 4 (Qof_4) that are mapped at the surface of the Project Site by Campbell and others (2014). The thickness and/or depth of the artificial fill within the subsurface may vary within the Project Site, but for the purposes of this assessment, SWCA assumes the thickness of artificial fill does not vary across the Project Site and the maximum depth of artificial fill is approximately 11 feet bgs (see Langan 2023).

Artificial fill sediments typically consist of reworked and recompacted sediments originating either from within a project site during its construction, or from outside a project site as imported sediments that are delivered from other regions and recompacted at a project site. Previously disturbed sediments or artificial fill may contain fossils, but fossils from these deposits would have been removed from their original stratigraphic, taphonomic, or paleoenvironmental context (provenance), making them scientifically nonsignificant. Therefore, unmapped recent artificial fill is unlikely to yield significant paleontological resources and has a low paleontological sensitivity (SVP 2010); however, artificial fill deposits are underlain by undisturbed "native" sediments that may have the potential to contain significant paleontological resources (see below).

Late Pleistocene Old Fan Deposits, Unit 4 (Qof_4)

According to geologic mapping by Campbell and others (2014), late Pleistocene old fan deposits, Unit 4 (Qof_4) are mapped at the surface of the Project Site (see Figure 4). The presence of Pleistocene fossils from depths as shallow as 5 feet bgs in developed urban areas in the Project's vicinity (NHMLA 2023) would indicate that Pleistocene sediments were likely present at the surface before site development, as indicated in the surficial geologic mapping by Campbell and others (2014). Today, the surface is capped

with recent artificial fill that partially replaced the uppermost "native" strata to depths of approximately 11 feet bgs (Langan 2023) (see above). Late Pleistocene old fan deposits, Unit 4 (Qof_4) in the region consist of gravel, sand, silt, and clay deposited along alluvial fans off the Santa Monica Mountains and are moderately to well consolidated and slightly to well cemented (Campbell et al. 2014; Dibblee and Ehrenspeck 1991).

It is important to note that the Project Site is along the northern edge of the Los Angeles Basin, immediately south of the Santa Monica Mountains and the Hollywood Fault (Dibblee and Ehrenspeck 1991), suggesting a relatively higher-energy depositional setting, with sediments from higher elevations off the mountains or upstream from fluvial or valley systems. In terrestrial environments, higher-energy depositional settings that deposit only coarse-grained sediments tend to either destroy organic remains or wash away such remains to areas further downslope/downstream before settling (if still intact) and becoming buried and fossilized. For alluvium likely to be deposited as alluvial channels and valley areas, strata can transition from fine-grained to coarse-grained sediments repeatedly. However, in the case of alluvial fans, grain size typically decreases downslope along the surface of the alluvial fan, such that the coarsest sediments (not likely to preserve fossils) are found at the apex of the fan near the channel in the highlands, with progressively finer sediments (more conducive to fossil preservation) deposited toward the toe of the fan where it meets the lowest point of the basin or valley floor. Perhaps more importantly, cross sections of alluvial fans generally will show relatively finer sediments buried under coarser sediments, with the older (stratigraphically lower) finer-grained sediments deposited at what was once the fan's original toe and later covered by increasingly coarser sediments as the fan prograded outward from the source over time. Therefore, although very coarse-grained alluvial fan deposits do not typically preserve intact organic remains as fossils, finer-grained sediments (fine gravel, sand, silt, and clay) within the subsurface of the alluvial fan represent a relatively lower energy environment (e.g., toe of the former alluvial fan) that may be conducive to the nondestructive burial and subsequent preservation of intact organic remains as fossils.

Pleistocene alluvial deposits have a rich fossil history in Southern California, especially in the Los Angeles Basin (Jefferson 1991a, 1991b; McDonald and Jefferson 2008; Miller 1971; Reynolds and Reynolds 1991; Springer et al. 2009). The most common Pleistocene terrestrial mammal fossils include the bones of mammoth, mastodon, giant ground sloth, bison, deer, camel, antelope, peccary, horse, lion, cheetah, wolf, capybara, small rodents, reptiles, snakes, frogs, and salamanders (Graham and Lundelius 1994; Hudson and Brattstrom 1977). In addition to illuminating the striking differences between the Pleistocene and today in Southern California, this abundant fossil record has been vital in studies of extinction (e.g., Barnosky et al. 2004; Sandom et al. 2014; Scott 2010), ecology (e.g., Connin et al. 1998), and climate change (e.g., Roy et al. 1996). Therefore, late Pleistocene old fan deposits, Unit 4 (Qof_4) have a high paleontological sensitivity (SVP 2010).

Museum Records Search

The NHMLA (2023) conducted a museum records search for known fossil localities within the Project Site and its vicinity (the search area is based on the surface mapping and subsurface information of relevant geologic units throughout the Los Angeles Basin and not based on a predefined search radius). Based on the results of the museum records search, the NHMLA (2023) does not possess records of paleontological resources from within the Project Site; however, several fossil localities have been recorded in the vicinity of the Project Site from unnamed Pleistocene deposits varying from shallow depths of 5 feet bgs to depths of at least 80 feet bgs. Table 1 summarizes the results of the NHMLA (2023) museum records search. Appendix A (confidential) provides the results of the museum records search.

Table 1. NHMLA Fossil Localities near the Project Site

Locality Number	Approximate Distance from the Project Site	Formation	Taxa	Approximate Depth (bgs)
LACM VP 6297 – 6300	0.60 mile	Older alluvium (Pleistocene; pebble-gravel; sand; sand and clay)	Horse (*Equus*), mastodon (*Mammut americanum*), bison (*Bison*), camel (*Camelops*)	47–80 feet bgs
LACM VP 6947	1.80 miles	Puente Formation (Weathered light gray thin bedded siltstone shale)	Herring (*Ganolytes*), bristlemouth (*Cyclothone*), drum (Sciaenidae)	70 feet bgs
LACM VP 5845	1.95 miles	Unknown formation (Pleistocene, unconsolidated yellow sediments)	Mastodon (Mammutidae)	5–6 feet bgs
LACM VP 3250	2.35 miles	Unrecorded (Pleistocene)	Mammoth (*Mammuthus*)	8 feet bgs
LACM VP 3371	2.50 miles	Unknown formation (Pleistocene; green clay)	Bison (*Bison*)	12 feet bgs (sewer replacement project)

Source: NHMLA (2023)

IMPACT ASSESSMENT

SWCA conducted this assessment to analyze the potential for significant impacts to paleontological resources resulting from implementation or construction of the Project. SWCA analyzed the existing data to estimate the depth of artificial fill and to determine the geologic units likely to be present in the subsurface at relevant depths that may be impacted by the Project. The surface of the Project Site is mapped as late Pleistocene old fan deposits, Unit 4 (Qof_4). Despite the geologic mapping of the surface, the uppermost "native" strata of these geologic units were likely partially replaced by unmapped recent artificial fill that has a maximum depth of approximately 11 feet bgs. Based on the results of this assessment, unmapped recent artificial fill has a low paleontological sensitivity but is underlain by late Pleistocene old fan deposits, Unit 4 (Qof_4) that has a high paleontological sensitivity.

The Project applicant proposes to demolish all existing structures and to construct a new mixed-use development. Earthwork activities would be required for the construction of a three-level subterranean garage that has a maximum excavation depth of approximately 40 feet bgs. Therefore, ground-disturbing activities in previously undisturbed sediments (i.e., not artificial fill) greater than 11 feet bgs may result in potentially significant impacts to important or unique paleontological resources. Any significant fossils encountered during ground disturbances in previously undisturbed sediments at this depth threshold, or in any geologic unit present at depth noted to have a high paleontological sensitivity, would be at risk for damage or destruction from construction activities, which would constitute an impact under CEQA.

CONCLUSIONS AND RECOMMENDATIONS

SWCA conducted an analysis of existing data, including a review of geologic maps, scientific literature, museum records, and other relevant information, to classify the paleontological sensitivity of the geologic units present at the surface and subsurface and to determine the potential for significant impacts to scientifically significant paleontological resources because of implementation or construction of the Project. The surface of the Project Site is mapped as late Pleistocene old fan deposits, Unit 4 (Qof_4).

Despite the geologic mapping of the surface, the uppermost "native" strata of these geologic units were likely partially replaced by unmapped recent artificial fill that has a maximum depth of approximately 11 feet bgs. Based on the results of this assessment, unmapped recent artificial fill has a low paleontological sensitivity but is underlain by geologic units of high paleontological sensitivity, including late Pleistocene old fan deposits, Unit 4 (Qof_4). Because the paleontological sensitivity of the geologic units increases to high sensitivity at approximately 11 feet bgs and earthwork activities are anticipated to reach up to 40 feet bgs for construction of the Project, any significant fossils encountered during ground-disturbing activities in previously undisturbed sediments of high sensitivity at depths greater than 11 feet bgs would be at risk for damage or destruction from such activities, which would constitute an impact under CEQA.

The implementation of appropriate mitigation measures will ensure that fossils, if encountered, are assessed for significance and, if deemed significant, salvaged and curated with an accredited repository. These actions will reduce potential impacts to paleontological resources to less-than-significant levels, pursuant to CEQA. Accordingly, SWCA recommends the following mitigation measures, which have been developed in accordance with and incorporate the performance standards of the SVP (1995, 2010), state and local regulations, and best practices in mitigation paleontology (Murphey et al. 2019).

1. **Retain a Qualified Paleontologist:** The Project applicant should retain a Qualified Paleontologist, who meets or exceeds the SVP (2010) definition, to carry out all regulatory compliance measures and protocols related to paleontological resources. The Qualified Paleontologist should obtain a curatorial arrangement with an accredited repository (e.g., NHMLA) before construction in the event of significant paleontological resource discoveries during construction.
2. **Conduct Worker Training:** The Qualified Paleontologist should develop Worker Environmental Awareness Program (WEAP) training to educate the construction crew on the legal requirements for preserving fossil resources, as well as the procedures to follow in the event of an unanticipated fossil discovery. This training program should be given to the crew before ground-disturbing work commences and should include handouts to be given to new workers as needed.
3. **Monitor for Paleontological Resources:** Full-time paleontological monitoring should occur during ground-disturbing activities at depths greater than 11 feet bgs that have the potential to impact previously undisturbed sediments of high paleontological sensitivity, including late Pleistocene old fan deposits, Unit 4 (Qof_4). Monitoring should not be required when ground-disturbing activities are less than or equal to 11 feet bgs, or when impacting only previously disturbed sediments and/or recent artificial fill, regardless of depth. Monitoring should be conducted by a qualified paleontological monitor who meets the standards of the SVP (2010) and who should be supervised by the Qualified Paleontologist. The Qualified Paleontologist may periodically inspect construction activities to adjust the level of monitoring in response to subsurface conditions. Monitoring efforts can be increased, reduced, or ceased entirely if determined adequate by the Qualified Paleontologist. Paleontological monitoring should include inspection of exposed sedimentary units during active excavations within sensitive geologic sediments. The monitor should have authority to temporarily divert activity away from exposed fossils to evaluate the significance of the find and, should the fossils be determined significant, professionally and efficiently recover the fossil specimens and collect associated data. The monitor should record pertinent geologic data and collect appropriate sediment samples from any fossil localities. Recovered fossils should be prepared to the point of curation, identified by qualified experts, listed in a database to facilitate analysis, and deposited in a designated paleontological repository (e.g., NHMLA).
4. **Prepare a Paleontological Resources Monitoring Report:** Upon the conclusion of ground-disturbing activities, the Qualified Paleontologist overseeing paleontological monitoring should

prepare a final monitoring report that documents the paleontological monitoring efforts for the Project and describes any paleontological resources discoveries observed and/or recorded during construction of the Project. If paleontological resources are curated, the final monitoring report and any associated data pertinent to the curated specimen(s) should be submitted to the designated repository. A copy of the final monitoring report should be filed with City Planning.

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APPENDIX A

Natural History Museum of Los Angeles County
Paleontological Records Search

CONFIDENTIAL – NOT FOR PUBLIC RELEASE

This confidential report is on file with the Department of City Planning.