Appendix E

Paleontology Report

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TECHNICAL MEMORANDUM

To: **Eyestone Environmental**
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Attn: Laura Rodriguez

From: Mathew Carson, M.S., Paleontology Team Lead; Jasmyn Nolasco, M.S., Staff Paleontologist

Date: October 13, 2023 (Revised December 7, 2023)

Re: **Paleontological Resources Technical Memorandum for the 9000 Airport Boulevard Project, Los Angeles, California**

INTRODUCTION

Eyestone Environmental (Eyestone) has retained SWCA Environmental Consultants (SWCA) to prepare a paleontological resources assessment for the proposed 9000 Airport Boulevard Project (Project) at 9000 Airport Boulevard in Los Angeles, California. The proposed Project would remove an existing rental car facility and construct new industrial warehouse buildings and office spaces. The Project is subject to review under the California Environmental Quality Act (CEQA), and the City of Los Angeles (City) Department of City Planning is the CEQA lead agency. This technical memorandum (memo) documents the methods and results of this paleontological resources assessment that included a review of geologic maps, geotechnical data, scientific literature, and confidential fossil locality records from the Natural History Museum of Los Angeles County (NHMLA).

PROJECT DESCRIPTION AND LOCATION

The Project is a new industrial development proposed for an approximately 18.1-acre site (Project site) in the Westchester-Playa del Rey Community Plan Area of Los Angeles (Figure 1). The Project would demolish an existing rental car facility composed of single-story commercial, accessory structures, and associated surface parking areas, and would construct one or three industrial warehouse buildings with associated office space. The Project would require rough grading and excavation to remove fill sediments and comply with engineering requirements. The total depth of excavation is estimated to be 10 feet or less below ground surface (bgs) across the full extent of the Project site.

The Project site is composed of the parcel designated as Los Angeles County Assessor Parcel Number 4125-010-016, which is associated with multiple street addresses abbreviated here as 9000 Airport Boulevard. The Project site measures approximately 738 feet by 1,132 feet. The Project site is bounded by Interceptor Street to the north, residential uses to the east, West Arbor Vitae Street to the south, and Airport Boulevard to the west, within the city of Los Angeles, California (Figure 2). The Project site is in Section 31, Township 2 South, Range 14 West, and is plotted on the U.S. Geological Survey (USGS) Venice, California, quadrangle (Figure 3).

Figure 1. Project vicinity within Los Angeles County.

Figure 2. Project site plotted on a 2020 aerial.

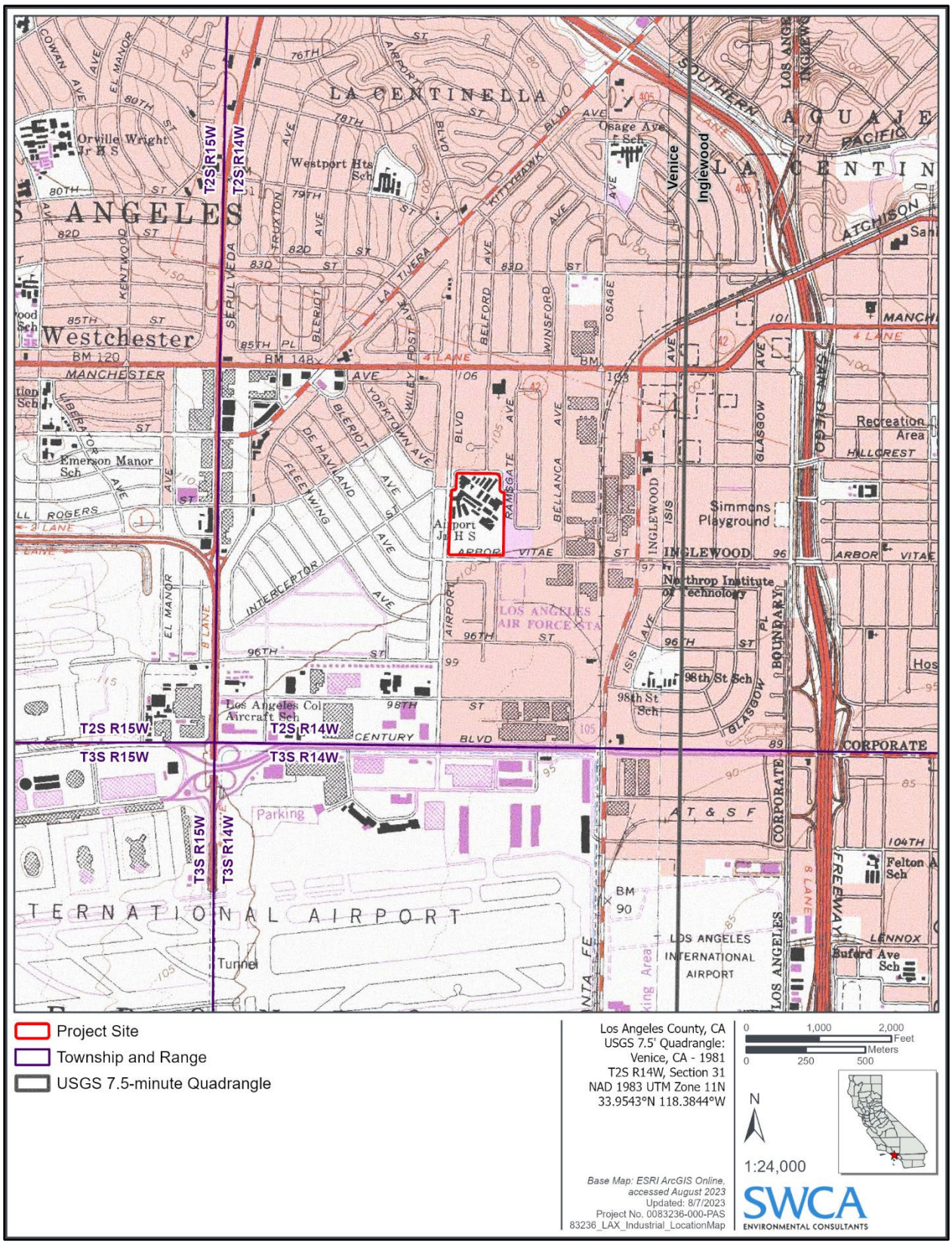

Figure 3. Project site plotted on Venice, California USGS 7.5-minute topographic quadrangle.

PROFESSIONAL STANDARDS

The Society of Vertebrate Paleontology (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., 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. 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.

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. This analysis also complies with guidelines and criteria specified by the SVP (2010) and follows best practices in mitigation paleontology (Murphey et al. 2019).

State Regulations

California Environmental Quality Act

CEQA is the principal statute governing environmental review of projects occurring in the state and is codified at Public Resources Code (PRC) Section 21000 et seq. CEQA requires lead agencies to determine if 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 [CCR] 15000 et seq.), define procedures, types of activities, persons, and public agencies required to comply with CEQA. Section VII(f) of the Environmental Checklist (State 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. Violation of this section is a misdemeanor.

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 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; and
- 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 significant impacts to paleontological resources within the Project site.

Existing Data Analysis

SWCA conducted an analysis of available existing data pertinent to paleontological resources. This analysis included a review of geologic mapping by Saucedo et al. (2016), published scientific literature and online databases, and fossil locality records maintained by the NHMLA (2023), received on August 13, 2023 (see confidential Attachment A).

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. The SVP (2010) 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… that 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… 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…[.]
>
> **Low Potential**. …[R]ock 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…[.] 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…[.]
>
> **No Potential**. …[R]ock units [that] 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 along the northern boundary of the Peninsular Ranges and the southern boundary of the Transverse Ranges. The Los Angeles Basin developed from tectonic forces associated with the northern migration of the San Andreas Fault zone, with subsidence occurring 18 to 3 million years ago (Critelli et al. 1995). The Los Angeles Basin is subdivided into four structural blocks, within which the Project site lies in the Southwestern Block, where sediments are approximately 20,500 feet thick (Yerkes et al. 1965). The Southwestern Block is approximately 28 miles long and 5 to 12 miles wide and is bounded on the north by the Santa Monica Mountains and Santa Monica Fault System, on the east by the Newport-Inglewood Fault System, and on the west by the Palos Verdes Hills Fault System; most of the block on the south is beneath the Pacific Ocean (Yerkes et al. 1965).

Within the Southwestern Block, sedimentary strata overlying basement rocks consist of mostly marine sedimentary rocks from the Miocene to the early Pleistocene and nonmarine sediments eroding from the surrounding montane regions from the middle to late Pleistocene to Recent (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 (Norris and Webb 1990). 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 and Santa Ana mountains) resulted in continued basin infilling during the late Pleistocene and Holocene with thick alluvial deposits in the present-day Los Angeles Basin that has yielded some of the best fossil sites in North America.

Local Geology and Paleontology

The Project site sits within the El Segundo dune complex that is bounded to the north by Ballona Creek and Baldwin Hills, the Palos Verdes Hills to the south, the Torrance Plain to the east, and the Pacific coast to the west; a total area of about 37 square miles (Cooper 1967). According to geologic mapping by Saucedo et al. (2016), the Project site is mapped at the surface as Pleistocene old eolian deposits (Qoe). Although Pleistocene old alluvium, undivided (Qoa) is mapped at the surface immediately east of the Project site, Qoa is likely younger than Qoe locally (Saucedo et al. 2016). However, as noted in the geotechnical investigation by Leighton Consulting, Inc. (Leighton), the uppermost strata have been

replaced with artificial fill, which directly overlies oxidized terrestrial sandy deposits attributed to Qoe regardless of depth of artificial fill (Pflueger and Kim 2023), suggesting that Qoa was either entirely absent from the site before previously site disturbance or would have been completely removed and replace with artificial fill. Therefore, the local Qoa mapped by Saucedo et al. (2016) will not be discussed further in this report; however, SWCA notes the presence of wide spread older alluvial deposits throughout the Los Angeles Basin that may underlie the local Qoe deposits (see *Pleistocene Old Eolian Deposits [Qoe]* section below). Instead, this study focuses on artificial fill and Qoe, which are described below (Figure 4).

Recent Artificial Fill

Although not mapped at the surface of the Project site by Saucedo et al. (2016), recent artificial fill (and other previously disturbed sediments) was noted at the surface of the Project site during Leighton's geotechnical investigation conducted for the Project. Artificial fill extends from the surface to depths as shallow as 3 feet bgs or as deep as 7.5 feet bgs, likely replacing the "native" sediments that were present prior to development to facilitate proper soil compaction and leveling for construction (Pflueger and Kim 2023). The artificial fill is described as being composed of clayey sand and silty clayey sands (Pflueger and Kim 2023).

Artificial fill and previously disturbed sediments sometimes contain redeposited fossils that no longer retain their associated with a specific stratigraphic context (i.e., provenance). Therefore, all previously disturbed sediments, including the artificial fill, are unlikely to yield scientifically significant paleontological resources and are considered to have a low paleontological sensitivity (SVP 2010).

Pleistocene Old Eolian Deposits (Qoe)

According to geologic mapping by Saucedo et al. (2016), Qoe are mapped at the surface within the Project site (see Figure 4). Regionally, Saucedo et al. (2016) describe this unit as poorly consolidated eolian (windblown) deposits of dense to very dense, well-sorted, fine- to coarse-grained sand and silty sand; locally, Pflueger and Kim (2023) describe this unit as yellow-brown to reddish-brown, slightly moist to moist, medium dense to very dense sand, silty sand, and clayey sand, with few interlayers of yellow-brown to orange-brown, moist, stiff to hard sandy clay and clay. A review of individual borehole logs recorded during the geotechnical investigation indicates that these deposits are mostly fine-grained, oxidized terrestrial eolian sand depths that extend to at least 14 feet bgs (Pflueger and Kim 2023), but according to Merriam (1949), the depth of Qoe can vary from 0 feet to 47 feet bgs. The uppermost strata (surface to 3 feet bgs up to 7.5 feet bgs) were likely replaced by artificial fill during previous site development.

While Qoe are of an appropriate age and lithology (e.g., fine-grained sand) to yield fossils, they are unlikely to contain fossils due to the erosion, transportation, deposition, and oxidation of terrestrial sand dune deposits. The physical and chemical processes that organic remains would have been subject to in this depositional setting are unconducive to fossil preservation. Based on the NHMLA (2023) records search results and the LAX Master Plan Final Environmental Impact State/Final Environmental Impact Report (EIS/EIR) (Los Angeles International Airport 2004), several fossil localities have been discovered at depths of 14 feet bgs; however, these fossil localities are likely recorded from underlying non-eolian older alluvial deposits, suggesting that Qoe deposits may transition to older alluvial deposits capable of preserving fossils at depths of 14 feet bgs, which corroborates the observations noted during the geotechnical investigation (Pflueger and Kim 2023). Throughout Southern California, Pleistocene-age older alluvial deposits have yielded fossil bones of mammoth, mastodon, giant ground sloth, lion,

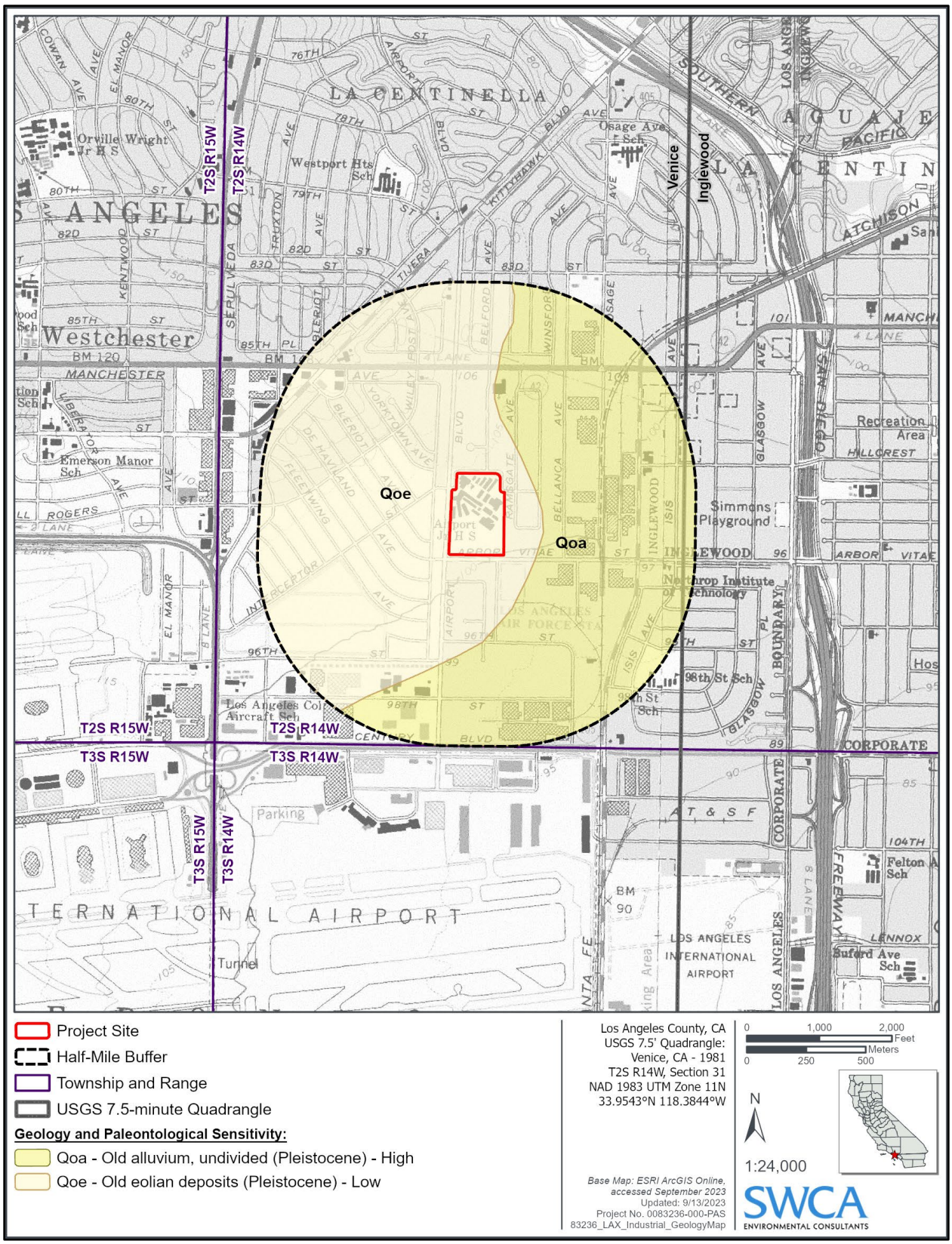

Figure 4. Geology and paleontological sensitivity of the Project site.

cheetah, wolf, horse, camel, antelope, deer, bison, peccary, capybara, small rodent, snake, frog, and salamander (Barnosky et al. 2004; Connin et al. 1998; Graham and Lundelius 1994; Hudson and Brattstrom 1977; Jefferson 1991a, 1991b; McDonald and Jefferson 2008; Miller 1971; Paleobiology Database 2023; Reynolds and Reynolds 1991; Roy et al. 1996; Sandom et al. 2014; Scott 2010; Springer et al. 2009; University of California Museum of Paleontology 2023). Therefore, Qoe has a low paleontological sensitivity (SVP 2010) but may overlie geologic units (e.g., older alluvial deposits) capable of preserving fossil at depths of 14 feet bgs or greater.

Museum Records Search

The NHMLA (2023) conducted a records search for known fossil localities in or near 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 14 feet bgs to depths of at least 40 feet bgs, and one fossil locality recorded in the San Pedro Sands at unknown depths. Table 1 summarizes the results of the NHMLA (2023) museum records search. Attachment A (confidential) provides the results of the museum records search.

Table 1. NHMLA Fossil Localities near the Project Site

Locality Number	Distance to project site	Formation	Taxa	Depth (below ground surface)
LACM VP 3789	0.40 miles	Unknown (Pleistocene; pebbly gray green to brown mud that directly overlies a gray-green fine sand)	Mammoth (*Mammuthus*)	14 feet bgs
LACM VP 4942	0.45 miles	Unknown formation (Pleistocene, massive sandy mudstone w scattered pieces of gravel)	Mammoth (*Mammuthus*); bison (*Bison*); hare (*Lepus*)	16 feet bgs
LACM VP 7332	0.55 miles	Unknown formation (Pleistocene; silty sand)	Mammoth (*Mammuthus*)	40 feet bgs
LACM VP 3264	1.25 miles	Unknown formation (Pleistocene sands)	Elephant clade (Proboscidea)	25 feet bgs
LACM VP 1170	2.65 miles	Unknown formation (Pleistocene)	Sloth (*Megalonyx*), camel (*Camelops*), weasel (*Mustela frenata*), bison (*Bison*), deer (*Odocoileus*), sabertooth cat (*Smilodon*), pronghorn antelope (*Capromeryx*), Mastodon (*Mammut*), peccary (*Platygonus*), horse (*Equus*), coot (*Fulica*), unidentified birds (Aves)	Unknown

Source: NHMLA (2023)

IMPACT ASSESSMENT

Artificial fill extends to depths of 3 feet to 7.5 feet bgs, overlying Qoe, which likely extends to depths of at least 14 feet bgs based on the results of the geotechnical investigation (Pflueger and Kim 2023) and fossil locality information from nearby projects (Los Angeles International Airport 2004; NHMLA 2023). Both artificial fill and Qoe have low paleontological potential (SVP 2010); however, Qoe may be underlain by older alluvial deposits capable of preserving fossils at 14 feet bgs or greater. The design of

the Project includes ground-disturbing activities to a maximum depth of 10 feet bgs. Because geologic units of high paleontological sensitivity are likely only present at depths of 14 feet bgs or greater, the potential for direct or indirect impacts to scientifically significant paleontological resources is low.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this assessment, SWCA finds that the Project will have **less than significant impacts to paleontological resources**.

Although encountering a paleontological resource during construction is unlikely, provisions for possible unanticipated fossil discoveries during construction should be considered. Accordingly, to ensure that potential impacts to paleontological resources in the Project site are clearly less than significant, SWCA recommends the following practices, which have been developed in accordance with, and incorporates the performance standards of the SVP (2010) and published best practices (Murphey et al. 2019). Implementation of these practices will ensure that any potential impacts to inadvertently discovered paleontological resources are reduced to less than significant levels.

1. **Paleontological Worker Environmental Awareness Program Training**. The Project applicant should retain a qualified paleontologist (project paleontologist/principal paleontologist), who meets or exceeds the SVP definition, to develop a 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 WEAP training should be given to the crew before ground-disturbing work commences and should include handouts to be given to new workers as needed.

2. **Unanticipated Fossil Discovery Protocols**. If an unanticipated fossil discovery occurs during implementation or construction of the Project, the contractor should immediately cease ground-disturbing activities within a 50-foot-buffer around the discovery. A qualified paleontologist should be retained by the Project applicant to inspect and evaluate the discovery. The qualified paleontologist, or a paleontological monitor working under the supervision of the qualified paleontologist, should have the authority to temporarily divert work activities away from the discovery as needed to facilitate its evaluation and to determine its significance. If it is determined to be potentially significant, the paleontological monitor should professionally and efficiently recover the fossil and curate it in an appropriate repository. Work should not continue within the buffer zone until the qualified paleontologist has finished evaluating and/or salvaging the paleontological resource(s) and has cleared the site. The qualified paleontologist may reassess the need for additional procedures, including but not limited to, presenting additional worker's environmental awareness trainings to on-site project personnel, implementing paleontological monitoring or spot-checking by qualified paleontological monitors, salvaging and curating significant discoveries, and preparing a final paleontological resources monitoring report at the end of the Project.

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ATTACHMENT 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.