# Appendix IS-7

Paleontological Resources Assessment

# PALEONTOLOGICAL RESOURCES ASSESSMENT FOR THE 1811–1825 SACRAMENTO STREET PROJECT, LOS ANGELES COUNTY, CALIFORNIA

An analysis of existing data in support of CEQA review

June 13, 2023

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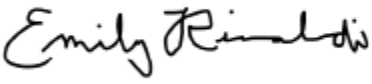
Approved by: 

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# Executive Summary

Stantec Consulting Services Inc. (Stantec) conducted a paleontological resources assessment on behalf of SCD 1811 Sacramento LLC for the 1811–1825 Sacramento Street Project (the Project) on portions of approximately 2 acres of land located at 1811 and 1825 Sacramento Street, in the City of Los Angeles, Los Angeles County, California. This paleontological study was conducted in support of the proposed demolition of the two existing buildings on the Project site and the construction of a new fifteen-story commercial office building.

The proposed Project is subject to compliance with California Environmental Quality Act (CEQA) and City of Los Angeles requirements regarding the Project's potential impacts on paleontological resources. The lead agency for this Project is the City of Los Angeles. As part of CEQA compliance, a paleontological resources assessment was conducted to assess potential impacts of the proposed Project on paleontological resources.

This paleontological resources assessment consisted of an analysis of existing data including a museum records search from the Natural History Museum of Los Angeles County and a review of the most recent geologic mapping, relevant scientific literature, the online collections of the University of California Museum of Paleontology, and a geotechnical study of the Project area (Geotechnologies, Inc. 2022). This research was used to assign paleontological potential rankings of the Society of Vertebrate Paleontology (2010) to the geologic units present in the Project area, either at the surface or in the subsurface. Following this, Project plans were reviewed to identify any potential impacts to paleontological resources and develop appropriate mitigation recommendations to reduce potential impacts to less than significant.

The results of this study indicate that the Project area is composed of 3 feet to 7 feet of artificial fill underlain by alluvial sediments that Yerkes and Graham (1997) have subdivided by age: Unit 2 is mapped at the surface and is assessed as having low paleontological potential, which is anticipated to be underlain by Unit 1, which is assessed as having low-to-high paleontological potential, increasing with depth; and which is in turn underlain by older alluvium, which has high paleontological potential. The depths at which the transition to high potential sediments is unknown but can be estimated as 10 feet in depth based on established depths of younger alluvial sediments.

In order to avoid impacts to paleontological resources and satisfy CEQA, and City of Los Angeles requirements, Stantec recommends a qualified paleontologist meeting professional standards as defined by Murphey et al. (2019) be retained as the designated Project Paleontologist to oversee all aspects of paleontological mitigation. Stantec recommends the following mitigation activities for the Project:

- The Project Paleontologist should develop a Worker’s Environmental Awareness Program training that communicates requirements and procedures for the inadvertent discovery of paleontological resources during construction, to be delivered by the paleontological monitor to the construction crew prior to the onset of ground disturbance.

- In the event that paleontological resources are encountered during construction activities, all work must stop in the immediate vicinity of the finds while the Project Paleontologist assesses and documents the find. Should the Project Paleontologist assess the find as significant, the find shall be collected and curated in an accredited repository along with all necessary associated data and curation fees. Regardless of significance, if fossils are discovered during construction the Project Paleontologist should design and implement a paleontological monitoring program for the remainder of ground disturbance.

Based on the findings in this study and the implementation of the above mitigation recommendations, the proposed Project should not cause an adverse impact to paleontological resources. Therefore, no additional paleontological resource studies are recommended or required at this time. Changes to the Project plans or Project area from those assessed in this study will require additional assessment for impacts to paleontological resources. This may include the need for paleontological monitoring, should additional types or depths of ground disturbance be implemented.

# Acronyms / Abbreviations

| | |
|---|---|
| bgs | Below ground surface |
| CEQA | California Environmental Quality Act |
| GIS | Geographic Information System |
| LACM | Natural History Museum of Los Angeles County |
| Ma | Million years ago |
| PRC | Public Resources Code |
| Project | 1811–1825 Sacramento Street Project |
| PRPA | Paleontological Resources Preservation Act |
| Stantec | Stantec Consulting Services Inc. |
| SVP | Society of Vertebrate Paleontology |
| UCMP | University of California Museum of Paleontology |

# Glossary

| | |
|---|---|
| Paleontological Monitor | An individual who has academic training (B.S., B.A., M.A., or M.S.) with an emphasis in paleontology or demonstrated equivalent experience (a minimum of two years of cumulative professional or nonprofessional work in laboratory preparation, curation, or field work related to paleontology, as well as documented self-taught knowledge of the discipline of paleontology). [Murphey et al. 2019] |
| Paleontological Monitoring | Full-time observation of construction activities in high potential geologic units by a paleontological monitor, under supervision of the project paleontologist. |
| Paleontological Resource | 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) [Society of Vertebrate Paleontology 2010] |
| Project Paleontologist | Someone with an advanced academic degree (M.A., M.S. or Ph.D.) with an emphasis in paleontology or demonstrated equivalent professional experience (e.g., minimum of 3 years [or 75 projects] of project experience with paleontological mitigation is considered equivalent to a graduate degree), in combination with 2 years (or 50 projects) of demonstrated professional experience and competency with paleontological resource mitigation projects at the level of field supervisor. [Murphey et al. 2019] |
| Spot check | A short inspection of excavations and subsurface conditions conducted by the paleontological monitor in order to confirm excavations are impacting low potential geologic units. |

# 1 Introduction

Stantec Consulting Services Inc. (Stantec) conducted a paleontological resources assessment on behalf of SCD 1811 Sacramento LLC for the 1811–1825 Sacramento Street Project (the Project) on portions of approximately 2 acres of land located at 1811 and 1825 Sacramento Street, in the City of Los Angeles, Los Angeles County, California. This paleontological study was conducted in support of the proposed demolition of the two existing buildings on the Project site and the construction of a new fifteen-story commercial office building.

The proposed Project is subject to compliance with California Environmental Quality Act (CEQA) and City of Los Angeles requirements regarding the Project's potential impacts on paleontological resources. The lead agency for this Project is the City of Los Angeles. As part of CEQA compliance, a paleontological resources assessment was conducted to assess potential impacts of the proposed Project on paleontological resources.

## 1.1 Project Description

The Project would include approximately 277,700 square feet of office space inclusive of approximately 232,500 square feet of interior office space and approximately 45,200 square feet of exterior covered office space. The Project also includes approximately 8,000 square feet of restaurant space and approximately 5,200 square feet of retail space, resulting in a total floor area of approximately 290,900 square feet. Project construction activities would begin with the demolition of the existing warehouse structures. The next phase would include grading and excavation, which would extend to a depth of approximately 11 feet below ground surface. The foundation would be laid, followed by building construction, and then finally paving and landscape installation. Project construction is anticipated to commence in 2024 and be completed in 2026.  It is estimated that approximately 11,800 cubic yards of export would be hauled off the Project Site.

## 1.2 Project Location

The proposed Project consists of two parcels, comprising approximately 1.71 acres: 1811 Sacramento Street associated with Assessor Parcel Number (APN) 5166-030-008 and 1825 Sacramento Street associated with APN 5166-030-009 (Figure 1). Specifically, the Project area is located in an unsectioned portion of the Los Angeles Land Grant within Township 1 South, Range 13 West, as depicted on the Los Angeles, California United States Geological Survey 7.5-minute series topographic quadrangle (Figure 2). The Project area is an irregular-shaped corner site generally bounded by adjacent developed properties to the north and southwest, Sacramento Street to the south, and Wilson Street to the east. The Project area is currently developed with warehouse buildings comprised of 40,479 square feet of floor area and associated surface parking.

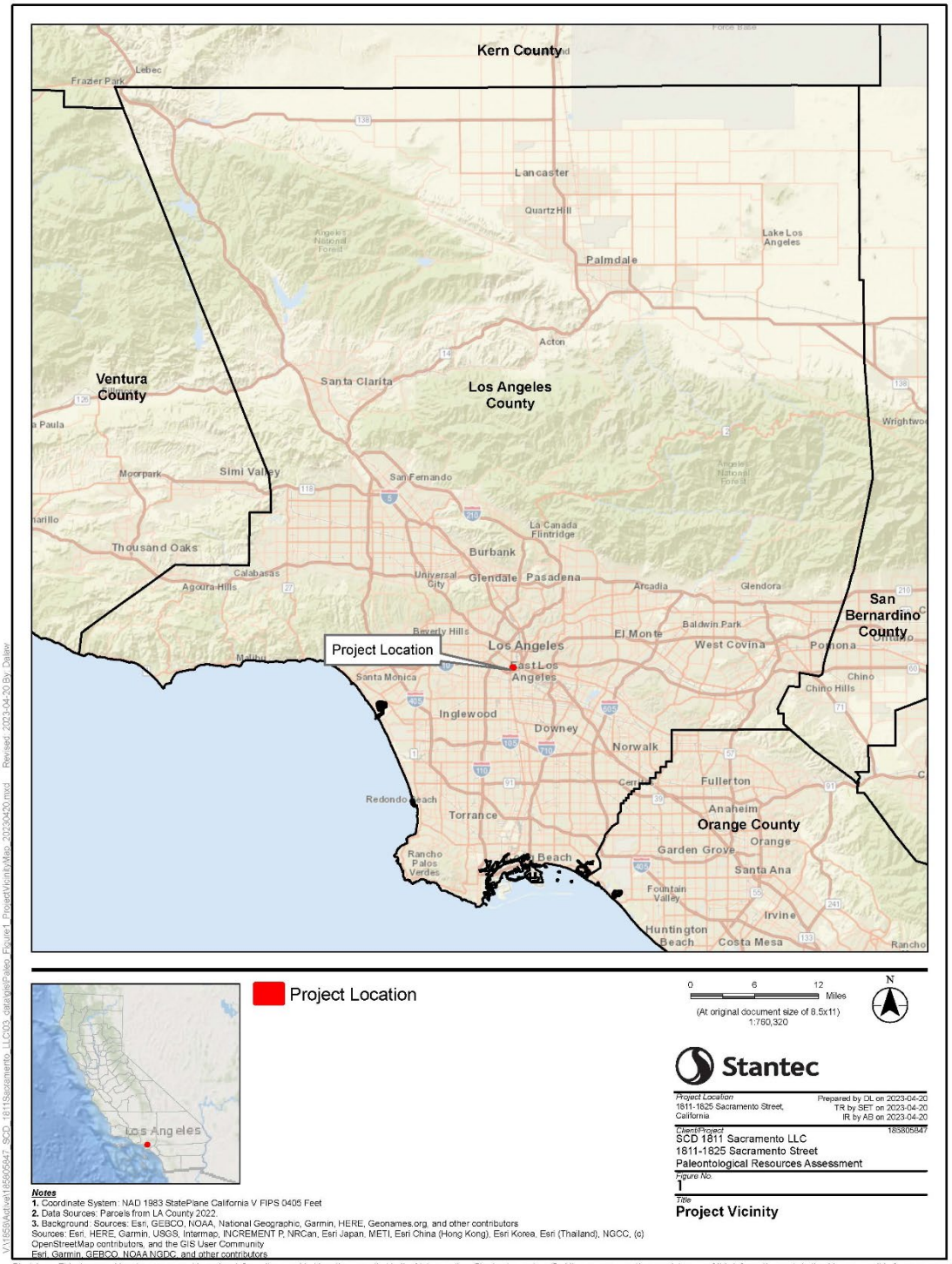


**Figure 1 Project Vicinity**


**Figure 2 Project Location Map**

## 1.3 Paleontological Resources

Fossils are any evidence of ancient life. This includes the remains of the body of an organism, such as bones, skin impressions, shell, or leaves, as well as traces of an organism's activity, such as footprints or burrows, called trace fossils. In addition to the fossils themselves, geologic context is an important component of paleontological resources, and includes the stratigraphic placement of the fossil as well as the lithology of the rock in order to assess paleoecologic setting, depositional environment, and taphonomy. Fossils are protected by federal, state, and local regulations as nonrenewable natural resources.

While CEQA does not define a significance threshold for paleontological resources, the standards of the Society of Vertebrate Paleontology (SVP) are often used in the absence of a legal definition of significance. The SVP defines significant paleontological resources as:

> 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].

Using this definition, the concept of scientific importance, or significance, is included in the definition of paleontological resources; thus, not all fossils are considered to be paleontological resources.

It should be noted that the threshold for significance varies with factors including geologic unit, geographic area, and the current state of scientific research, and may also vary between different agencies (Murphey et al. 2019). Numerous paleontological studies have developed criteria for the assessment of significance for fossil discoveries (e.g., Eisentraut and Cooper 2002, Murphey et al. 2019, Murphey and Daitch 2007, Scott and Springer 2003). In general, these studies assess fossils as significant if one or more of the following criteria apply:

- The fossils provide information on the evolutionary relationships and developmental trends among organisms, living or extinct.
- 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, through biochronology or biostratigraphy and the correlation with isotopic dating.
- The fossils provide ecological data, such as the development of biological communities, the interaction between paleobotanical and paleozoological biotas, or the biogeography of lineages.
- The fossils demonstrate unusual or spectacular circumstances in the history of life.
- The fossils provide information on the preservational pathways of paleontological resources, including taphonomy, diagenesis, or preservational biases in the fossil record.

- The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.
- The fossils inform our understanding of anthropogenic affects to global environments or climate.

A geologic unit known to contain significant paleontological resources is considered sensitive to adverse impacts if there is a high probability that earth-moving or ground-disturbing activities in that rock unit will either disturb or destroy fossil remains directly or indirectly. This definition of sensitivity differs fundamentally from the definition for archaeological resources as follows:

> It is extremely important to distinguish between archaeological and paleontological (fossil) resource sites when defining the sensitivity of rock units. The boundaries of archaeological sites define the areal extent of the resource. Paleontological sites, however, indicate that the containing sedimentary rock unit or formation is fossiliferous. The limits of the entire rock formation, both areal and stratigraphic, therefore define the scope of the paleontological potential in each case. [SVP 2010: 2].

Many archaeological sites contain features that are visually detectable on the surface. In contrast, fossils are often contained within surficial sediments or bedrock and are therefore not observable or detectable unless exposed by erosion or human activity.

In summary, in the absence of observable paleontological resources on the surface, paleontologists must assess the potential of geologic units as a whole to yield paleontological resources based on their known potential to produce significant fossils elsewhere. Monitoring by experienced paleontologists greatly increases the probability that fossils will be discovered during ground-disturbing activities and that, if these remains are significant, successful mitigation and salvage efforts may be undertaken to prevent adverse impacts to these resources.

# 2.0 Regulatory Framework

The State of California and the City of Los Angeles have enacted multiple laws and regulations that provide for the protection of paleontological resources. This investigation was conducted to meet these requirements regarding paleontological resources on the lands proposed for development.

## 2.1 State of California

### 2.1.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA (Public Resources Code [PRC] Sections 21000 et seq) requires that before approving most discretionary projects, the Lead Agency must identify and examine any significant adverse environmental effects that may result from activities associated with such projects. As updated in 2016, CEQA separates the consideration of paleontological resources from cultural resources (PRC Section 21083.09). The Appendix G checklist (Title 14, Division 6, Chapter 3, California Code of Regulations 15000 et seq.)

requires an answer to the question, “Will the proposed project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?” Under these requirements, Stantec has conducted a paleontological resources assessment to determine impacts of the proposed project on paleontological resources within the Project area.

### 2.1.2 PUBLIC RESOURCES CODE

The California PRC (Chapter 1.7, Sections 5097 and 30244) includes additional state-level requirements for the assessment and management of paleontological resources. These statutes require reasonable mitigation of adverse impacts to paleontological resources resulting from development on state lands, define the removal of paleontological sites or features from state lands as a misdemeanor, and prohibit the removal of any paleontological site or feature from state land without permission of the applicable jurisdictional agency.

## 2.2 Local Regulations

### 2.2.1 CITY OF LOS ANGELES GENERAL PLAN

The Conservation Element of the City of Los Angeles General Plan recognizes paleontological resources in Section 3: “Archeological and Paleontological” (II-3), specifically the La Brea Tar Pits, and identifies protection of paleontological resources as an objective (II-5). The General Plan identifies site protection as important, stating, “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).

The City of Los Angeles’ (2006) CEQA Thresholds Guide Section D:1 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.

# 3.0 Professional Standards

The SVP (2010) and a number of scientific studies (Eisentraut and Cooper 2002; Murphey et al. 2019; Scott and Springer 2003) have developed guidelines for professional qualifications, conducting paleontological assessments, and developing mitigation measures for the protection of paleontological resources. These guidelines are broadly similar, and include the use of museum records searches,

scientific literature reviews, and, in some cases, field surveys to assess the potential of an area to preserve paleontological resources. Should that potential be high, accepted mitigation measures include paleontological monitoring, data recordation of all fossils encountered, collection and curation of significant fossils and associated data, and in some cases screening of sediment for microfossils.

This study has been conducted in accordance with these guidelines and the recommendations provided herein meet these standards.

# 4.0 Geologic Setting

The Project area is located in the Los Angeles Basin, a structural depression approximately 50 miles long and 20 miles wide in the northernmost Peninsular Ranges geomorphic province and just to the south of the Transverse Ranges geomorphic province (Ingersoll and Rumelhart 1999). The Los Angeles Basin developed as a result of tectonic forces and the San Andreas fault zone, with subsidence occurring 18 to 3 million years ago (Ma) (Critelli et al. 1995). While sediments dating back to the Cretaceous (66 Ma) are preserved in the basin, continuous sedimentation began in the middle Miocene (around 13 Ma) (Yerkes et al. 1965). Since that time, sediments have been eroding into the basin from the surrounding highlands, resulting in thousands of feet of accumulation (Yerkes et al. 1965). Most of these sediments are marine, until sea level dropped in the Pleistocene and deposition of the terrestrial alluvial sediments that compose the uppermost units in the Los Angeles Basin began.

The Los Angeles Basin is subdivided into four structural blocks, with the Project area occurring in the Central Block, where sediments range from 32,000 to 35,000 feet thick (Yerkes et al. 1965). The Central Block is wedge-shaped, extending from the Santa Monica Mountains in the northwest, where it is about 10 miles wide, to the San Joaquin Hills to the southeast, where it widens to around 20 miles across (Yerkes et al. 1965).

# 5.0 Methodology

To assess if paleontological resources are likely to be encountered in any given area, the paleontological potential of the geologic units present in the area is assessed. Paleontological potential of a geologic unit consists of both (a) the potential for yielding abundant vertebrate fossils or for yielding 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 (SVP 2010). Unlike archaeological resources that often have a limited aerial extent, paleontological resources may occur throughout a geologic unit, and so paleontological potential is assessed for the unit as a whole. Provided below is the methodology used during the current study to assess the potential of the Project to impact paleontological resources.

The paleontological impacts assessment presented here was conducted by Principal Paleontologist Alyssa Bell, Ph.D. Geographic Information System (GIS) maps and figures were drafted by GIS technician Danny Law, B.S. This report was authored by Alyssa Bell and Paleontologist Ben Kerridge,

M.A. and peer reviewed by Cara Corsetti, M.S. Stantec's work in support of the Project was managed by Emily Rinaldi-Williams, M.S., who coordinated all work and provided quality assurance and control.

## 5.1 Analysis of Existing Data

In order to assess the paleontological potential of the Project area, the most recent geologic mapping of the Project area and vicinity (Yerkes and Graham 1997) was consulted to identify all geologic units present at the surface or likely present in the subsurface. A geotechnical study for this Project was completed in 2022 consisting of three borings to depths between 30 and 55 feet bgs (Geotechnologies 2022). The results of this study were incorporated into this assessment to evaluate the subsurface geologic conditions in the Project area. A records search was obtained from the Natural History Museum of Los Angeles County (LACM) (2023) (Appendix A) and a review of the scientific literature was conducted to determine the history of each of the geologic units mapped as present at the surface or likely present in the subsurface of the Project area for preserving paleontological resources. The online collections database of the University of California Museum of Paleontology (UCMP) was also consulted. The UCMP's database does not provide specific geographic locations beyond the county the fossils were recovered from but does include locality names that can sometimes be used to infer the general area of the locality.

## 5.2 Paleontological Resources Assessment

The results of the analysis of existing data were used to assign the paleontological potential rankings of the SVP (2010) to the geologic units likely present in the Project area. These rankings are designed to inform the development of appropriate mitigation measures for the protection of paleontological resources and are widely accepted as industry standards in paleontological mitigation (Murphey et al. 2019; Scott and Springer 2003). These rankings are as follows:

> **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. Rock units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations that are temporally or lithologically suitable for the preservation of fossils (e. g., middle Holocene and older, fine-grained fluvial sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstones, fine-grained marine sandstones, etc.), some volcaniclastic formations (e. g., ashes or tephras), and some low-grade metamorphic rocks.
>
> **Undetermined Potential**. Rock units for which little information is available in the literature or museum records concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study and field work is necessary to determine if these rock units have high or low potential to contain significant paleontological resources.

**Low Potential**. Rock units that are poorly represented by fossil specimens in institutional collections or, based on general scientific consensus, only preserve fossils in rare circumstances (e. g., basalt flows or Recent colluvium) have low paleontological potential.

**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).

## 5.3 Paleontological Impacts Assessment

Following the assessment of paleontological potential, an impacts assessment was conducted comparing planned Project activities in terms of locations, depths, and ground disturbance methods with mapped geologic units. Where potential adverse impacts from Project activities were identified, mitigation recommendations were developed to reduce those impacts to less than significant.

Impacts to paleontological resources can be classified as direct, indirect, or cumulative. Impacts can also be considered as adverse impacts or as positive impacts. Direct adverse impacts on paleontological resources are the result of damage or destruction of these nonrenewable resources by surface disturbing actions including construction excavations. Therefore, in areas that contain paleontologically sensitive geologic units, ground disturbance has the potential to adversely impact paleontological resources, by damaging or destroying them and rendering them permanently unavailable to science and society. Positive direct impacts, however, may result when paleontological resources are identified during construction and the appropriately documented and salvaged, thus ensuring the specimens are protected for future study and education.

Indirect impacts typically include those effects which result from the continuing implementation of management decisions and resulting activities, including normal ongoing operations of facilities constructed within a given project area. They also occur as the result of the construction of new roads and trails in areas that were previously less accessible. This increases public access and therefore increases the likelihood of the loss of paleontological resources through vandalism and unlawful collecting, thus constituting an adverse indirect impact. Human activities that increase erosion also cause indirect impacts to surface and subsurface fossils as the result of exposure, transport, weathering, and reburial.

Cumulative adverse impacts can result from incrementally minor but collectively significant actions taking place over time. The incremental loss of paleontological resources over time from construction-related surface disturbance or vandalism and unlawful collection would represent a significant cumulative adverse impact, because it would result in the destruction of non-renewable paleontological resources and the associated irretrievable loss of scientific information.

The impact assessment conducted here takes into consideration all planned project activities in terms of aerial and subsurface extents, including the possibility of subsurface geologic units having a different paleontological potential than surficial units. For example, younger surficial sediments (alluvium, lacustrine, eolian, etc.) have low potential to preserve paleontological resources due to their age; yet sediments increase in age with depth and so these surficial deposits often overly older units that have

high paleontological potential. In areas with this underlying geologic setting surficial work may be of low risk for impacting paleontological resources while activities that require excavations below the depth of the surficial deposits would be at greater risk of impacting paleontological resources. For this reason, the impact assessment takes into consideration both the surface and subsurface geology and is tailored to Project activities.

# 6.0 RESULTS

## 6.1 Project Area Geology and Paleontology

The geotechnical study found that the Project area is underlain by 3 feet to 7 feet of artificial fill underlain by alluvial sediments (Geotechnologies 2022). Geologic mapping by Yerkes and Graham (1997) indicates these alluvial sediments can be subdivided by age, with Unit 2 mapped at the surface, which is anticipated to be underlain by Unit 1 and which is in turn underlain by older alluvium, which has high paleontological potential. These geologic units range in age from the Recent to the late Pleistocene, just over 11,500 years ago, and are described below (Figure 3).

**Artificial Fill.** The geotechnical study found a layer of artificial fill up to 7 feet thick underlying the Project area (Geotechnologies 2022). This artificial fill consisted of silty sand with some brick fragments. As artificial fill has been extensively disturbed and deposited by human activity, it does not include geologic context and is unlikely to preserve fossils.

**Alluvium.** Alluvial sediments represent terrestrial deposition of water-transported sediments from the surrounding highlands. Two units of alluvium are likely present, the upper Unit 2, which consists of unconsolidated and uncemented gravel, sand, silt, and clay which underlie historically flooded areas (Yerkes and Graham 1997). These sediments are relatively young in age, dating to the last 1,000 years, and range up to 9 feet in thickness. This unit is underlain by Unit 1, which is similar in composition but older, dating from approximately 1,000 to 10,000 years old.

While Unit 2 is too young to preserve fossils, Unit 1 is of an age to preserve fossils at depth. As fossils are considered by the SVP to be older than middle Holocene, or approximately 5,000 years old, the deeper layers of this unit are of an age to preserve paleontological resources, while the surficial and shallow layers are not. A review of the online, publicly accessible database of the UCMP (2023) indicates that they have records of 30 fossil localities associated with Holocene nonmarine deposits in Los Angeles County. All 30 of these localities preserved plant fossils, and 28 of them preserved both plant fossils and microfossils. While precise locality data are not provided, one of the localities is listed as being from the Metropolitan Water District Headquarters, which is just east of downtown Los Angeles, with other localities from Santa Monica, the Metrorail Universal City Station, the San Gabriel River, and from the Angeles National Forest in the northwestern portion of the county (UCMP 2023).

**Older Alluvium**. Older alluvium is likely present in the subsurface of the Project area at an unknown depth. The geotechnical report identified alluvium to a depth of 55 feet bgs but did not make a determination of age of any of the encountered alluvium (Geotechnologies 2022). These sediments

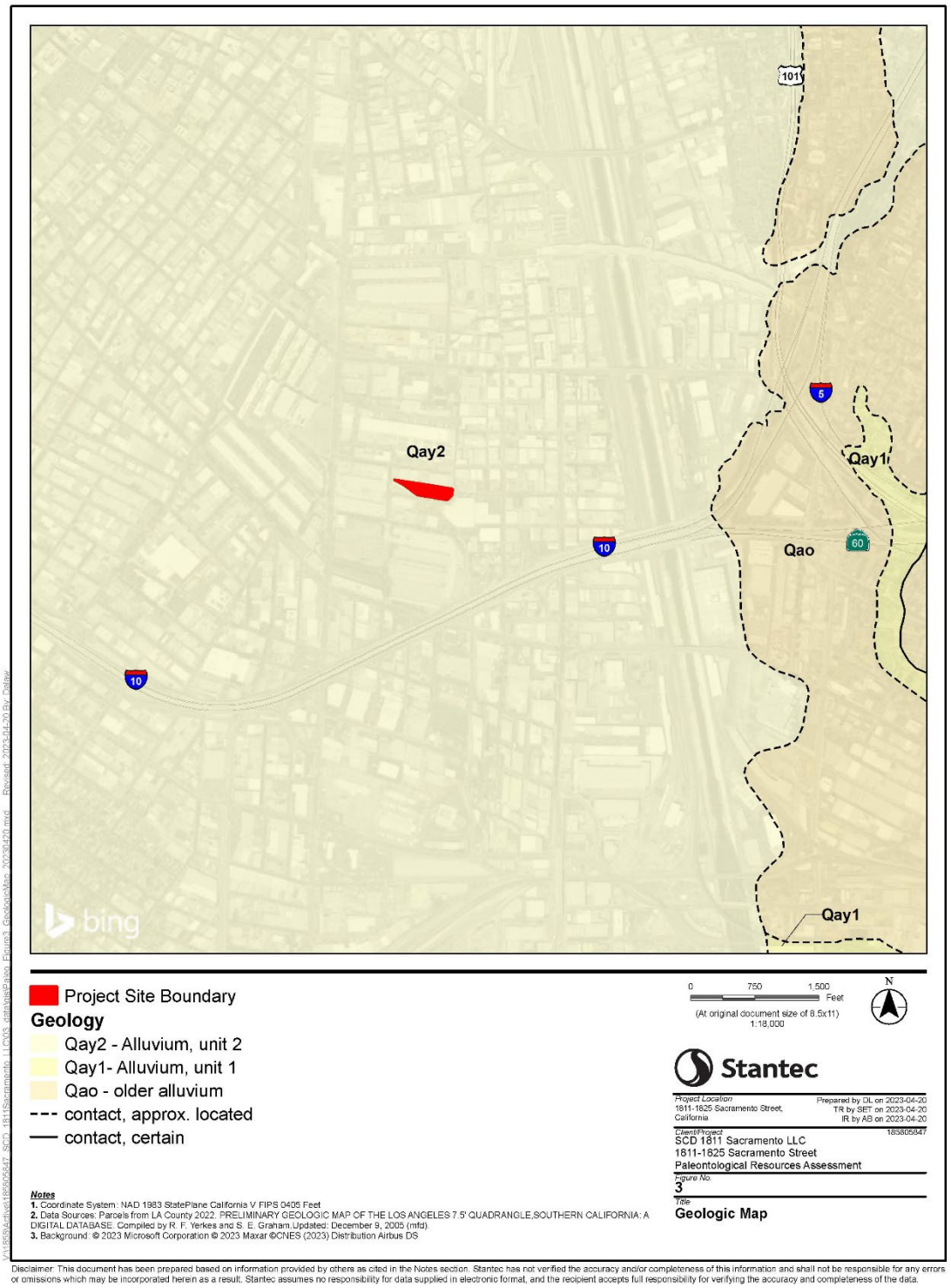


**Figure 3 Geologic Map**

consist of moderately to well consolidated, slightly to well cemented, dissected gravel, sand, silt, and clay (Yerkes and Graham 1997). These older alluvial sediments are dated to the late Pleistocene (approximately 129,000 to 11,700 years ago) and likely represent the remnants of a piedmont alluvial fan system (Yerkes and Graham 1997). As such, they are of an age to preserve fossils and have a similar fossil record to that described above for the early Holocene-aged alluvial sediments.

The locality search from the LACM returned several fossil localities known to the LACM in the vicinity of the Project area from older alluvial sediments similar to those that are likely present in the subsurface of the Project area at an undetermined depth (Table 1) (LACM 2023). The closest of these was discovered approximately 1.6 miles to the northwest of the Project area and consisted of horse fossils encountered 43 feet bgs (LACM 2023). Two more localities approximately 2.5 miles to the northeast of the Project area produced fossils of sabretooth cat, horse, deer, and turkey at unknown depths during excavations for storm drains as well as mastodon fossils at depths of 20 to 35 feet bgs (LACM 2023). A locality approximately 4 miles to the east of the Project area produced horse fossils at unknown depths, and another approximately 6.5 miles to the southeast of the Project area included an array of vertebrate fossils including specimens of fish, snake, and rodents (LACM 2023). The UCMP database records show more than 180 Pleistocene nonmarine localities within Los Angeles County, including 17 with a vertebrate component, nine containing preserved plants, and the remainder preserving invertebrate fossils (UCMP 2023).

Additionally, a review of the scientific literature indicates that older alluvial sediments are well known for the preservation of fossils representing a rich Ice Age fauna in the Los Angeles Basin and vicinity. These include animals still found in North America today, such as deer, bison, sheep, and horses; creatures no longer found in North America, such as camels, lions, cheetahs, and sloths; and extinct creatures such as mammoths, dire wolves, and saber-toothed cats (Jefferson 1991 a and b, Graham and Lundelius 1994, McDonald and Jefferson 2008, Miller 1971, Reynolds and Reynolds 1991). In addition to these iconic large animals, a wide variety of small animals can be preserved, including reptiles such as frogs, salamanders, snakes (Hudson and Brattstrom 1977), and birds (Collins et al. 2018, Jones et al. 2008, Miller 1941). These fossils are important for recreating the history of Southern California, in particular studying climate change (e.g., Roy et al. 1996), extinction (e.g., Barnosky et al. 2004, Jones et al. 2008, Sandom et al. 2014, Scott 2010), and paleoecology (e.g., Connin et al. 1998, Trayler et al. 2015).

**Table 1 Summary of the records search from the Natural History Museum of Los Angeles County**

| Locality Number | Geologic Unit | Age | Taxa | Depth | Approximate Location |
|---|---|---|---|---|---|
| LACM VP 1755 | Unknown formation | Pleistocene | Horse (*Equus*) | 43 feet bgs | Approximately 1.6 miles northwest of the Project area |
| LACM VP 1023 | Unknown formation | Pleistocene | Sabretooth cat *(Smilodon),* horse *(Equus),* deer *(Odocoileus),* Turkey *(Meleagris)* | Unknown (excavation for storm drains) | Approximately 2.5 miles northeast of the Project area |

| Locality Number | Geologic Unit | Age | Taxa | Depth | Approximate Location |
|---|---|---|---|---|---|
| LACM VP 2032 | Unknown formation; silt and clay | Pleistocene | Mastodon (*Mammut*) | 20-35 feet bgs | Approximately 2.5 miles northeast of the Project area |
| LACM VP 3363 | Unknown formation; sand and silt | Pleistocene | Horse (*Equus*) | unknown | Approximately 4 miles east of the project area |
| LACM VP 7701-7702 | Unknown formation; silt | Pleistocene | Fish (*Gasterosteus*); Snake (Colubridae), Rodents (*Thomomys*, *Microtus, Reithrodontomys*); Rabbit (*Sylvilagus*) | 30 feet bgs | Approximately 6.5 miles southeast of the Project area |

## 6.2 Paleontological Potential of Geologic Units in the Project Area

In order to assess the potential of the geologic units present at the surface or in the subsurface to preserve paleontological resources, Stantec conducted an analysis of existing data, as described above. These investigations were used to assign the paleontological potential rankings of the SVP (2010) to the geologic units present at the Project area, both at the surface and in the subsurface. The results of this assessment are described below for each of the geologic units in the Project area (Table 4).

**Artificial Fill.** The artificial fill encountered in the course of the geotechnical study for this Project, as a result of human activities, dates to very recent time (Geotechnologies 2022). These sediments are therefore too young to preserve fossils and are considered to be of low paleontological potential. However, they overlie sediments that are old enough to preserve fossils.

**Alluvium**

- Unit 1 of the Holocene-aged alluvium present in the Project area dates to the last 1,000 years (Yerke and Graham 1997). As defined by the SVP (2010), paleontological resources must be over 5,000 years in age, corresponding to the middle part of the Holocene. Therefore, this unit has low paleontological potential.
- Unit 2 of Holocene-aged alluvium ranges up to 10,000 years in age and is therefore old enough to preserve fossils. Given the documentation of fossil localities in early Holocene-aged deposits across Los Angeles County by the UCMP (2023), it is here assessed as having low-to-high paleontological potential, increasing with depth. The exact depth at which 5,000-year-old sediments are present is unknown.

**Older Alluvium.** The older alluvial deposits likely present in the subsurface of the Project area date to the late Pleistocene (Yerke and Graham 1997), which corresponds roughly to between 11,700 and 129,000 years ago. Given the extensive record of significant fossils recovered from the older layers of alluvial sediments in the region, the older alluvium deposits in the Project area are assessed as having high paleontological potential.

**Table 2 Paleontological potential of geologic units within the Project area**

| Geologic Unit | Age | Occurrence within Project area | Paleontological Potential* |
|---|---|---|---|
| Artificial fill | Recent | Surface to 7 feet bgs | Low |
| Holocene alluvium, Unit 2 | Recent to 1,000 years | Underlying artificial fill, entire Project area | Low |
| Holocene alluvium, Unit 1 | Holocene (1,000 to 10,000 years) | Likely subsurface of the entire Project area | Low to High |
| Older alluvium | Late Pleistocene (11,700 to 129,000 years) | Likely subsurface of the entire Project area | High |

**ranking based on the SVP (2010) classifications*

## 6.3 Potential Impacts to Paleontological Resources from Project Activities

The paleontological potential assessment presented above indicates that the Project area consists of 3 feet to 7 feet of artificial fill with low paleontological potential overlying native alluvium with low potential that transitions to high potential, likely underlain by high potential older alluvium. While the exact depth of this transition is unknown, it is likely over 10 feet in depth, as the low potential Unit 1 is typically as much as 9 feet thick. Should paleontological resources preserved in the high potential units be damaged or destroyed by Project activities it would constitute a direct adverse impact under CEQA. Therefore, an impacts assessment was conducted to evaluate planned Project activities and their likelihood to pose an adverse impact to paleontological resources.

The Project plans to demolish the existing buildings on the Project site and construct a new fifteen-story commercial office building. This will entail ground disturbance consisting of excavations to a depth of 11 feet bgs. Given the likely thickness of the younger Unit 1 alluvial deposits as 9 feet bgs, impacts to deeper sediments with high paleontological potential are likely to be minimal, given the maximum excavation depths of 11 feet. Therefore, Stantec recommends that risk of adverse impacts are low. However, in the unlikely event that paleontological resources are encountered, their damage or destruction would constitute a direct adverse impact. Therefore, Stantec has developed recommendations for mitigation that will avoid damage or destruction of paleontological resources in the Project area, thus reducing direct adverse impacts to less than significant. It is not anticipated that the Project will pose indirect or cumulative adverse impacts to paleontological resources, as the final Project will not entail increased exposure or erosion of native sediments beyond the duration of the ground disturbance described above.

# 7.0 Recommendations and Management Considerations

The paleontological resources assessment described herein conducted an analysis of existing data, consisting of a records search from the LACM and a review of geologic mapping, the scientific literature, the results of the geotechnical study for the Project, and the online collections of the UCMP, to assess the potential of the geologic units in the Project area to preserve paleontological resources. The results of this assessment show that geologic units with high paleontological potential are present in the subsurface, most likely at depths of over 10 feet bgs throughout the Project area, but that Project plans for grading to maximum depths of 11 feet bgs are unlikely to impact these high potential sediments.

Should Project-related activities encounter paleontological resources, the damage or destruction of those resources would constitute an adverse impact under CEQA. In order to avoid impacts to paleontological resources, Stantec recommends a qualified paleontologist meeting professional standards as defined by Murphey et al. (2019) be retained as the designated Project Paleontologist to oversee all aspects of paleontological mitigation. In order to avoid impacts to paleontological resources, Stantec recommends the following mitigation activities for the Project:

- The Project Paleontologist should develop a Worker's Environmental Awareness Program training that communicates requirements and procedures for the inadvertent discovery of paleontological resources during construction, to be delivered by the paleontological monitor to the construction crew prior to the onset of ground disturbance.
- In the event that paleontological resources are encountered during construction activities, all work must stop in the immediate vicinity of the finds while the Project Paleontologist assesses and documents the find. Should the Project Paleontologist assess the find as significant, the find shall be collected and curated in an accredited repository along with all necessary associated data and curation fees. Regardless of significance, if fossils are discovered during construction the Project Paleontologist should design and implement a paleontological monitoring program for the remainder of ground disturbance.

Based on the findings in this study and the implementation of the above mitigation recommendations, the proposed Project should not cause an adverse impact to paleontological resources. Therefore, no additional paleontological resource studies are recommended or required at this time. Changes to the Project plans or Project area from those assessed in this study will require additional assessment for impacts to paleontological resources. This may include the need for paleontological monitoring, should additional types or depths of ground disturbance be implemented.

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# APPENDIX A

**Records search from the Natural History Museum of Los Angeles County**

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Research & Collections

e-mail: paleorecords@nhm.org

February 6, 2023

Eyestone Environmental
Attn: Stephanie Eyestone-Jones

re: Paleontological resources for the 1811 Sacramento Street Project

Dear Stephanie:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for proposed development at the 1811 Sacramento Street Project area as outlined on the portion of the Los Angeles USGS topographic quadrangle map that you sent to me via e-mail on January 19, 2023. We do not have any fossil localities that lie directly within the proposed project area, but we do have fossil localities nearby from the same sedimentary deposits that occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County (NHMLA).

| Locality Number | Location | Formation | Taxa | Depth |
|---|---|---|---|---|
| LACM VP 1755 | Near 12th & Hill Sts | Unknown Formation (Pleistocene) | Horse (*Equus*) | 43 feet bgs |
| LACM VP 3363 | W of Monterey Pass Road in Coyote Pass; E of the Long Beach Freeway & S of the N boundary of Section 32; Monterey Park | Unknown Formation (Pleistocene; sand and silt) | Horse (*Equus*) | unknown |
| LACM VP 7701-7702 | Intersection of 26th St and Atlantic Blvd, Bell Gardens | Unknown Formation (Pleistocene; silt) | Fish (*Gasterosteus*); Snake (Colubridae), Rodents (*Thomomys, Microtus, Reithrodontomys)*; Rabbit (*Sylvilagus*) | 30 feet bgs |
| LACM VP 1023 | Workman & Alhambra Sts | Unknown Formation (Pleistocene) | sabertooth cat (*Smilodon*), horse (*Equus*), deer (*Odocoileus*), Turkey (*Meleagris*) | Unknown (excavations for storn drains) |
| LACM VP 2032 | Los Angeles Brickyard Mission Rd. & Daly St. | Unknown Formation (Pleistocene, silt & clay) | Mastodon (*Mammut*) | 20-35 feet bgs |

*VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface*

This records search covers only the records of the NHMLA. It is not intended as a paleontological assessment of the project area for the purposes of CEQA or NEPA. Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a full paleontological assessment of the project area be conducted by a paleontologist meeting Bureau of Land Management or Society of Vertebrate Paleontology standards.

Sincerely,

Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice