

# Appendix E

## **Paleontological Resources Assessment**



**For Public Distribution**

# **FOURTH & CENTRAL PROJECT, CITY OF LOS ANGELES, CALIFORNIA**

Paleontological Resources Assessment Report

Prepared for  
CP LA Cold Storage Land, LLC  
1881 16th Street  
Denver, CO 80202

January 2022





**For Public Distribution**

# **FOURTH & CENTRAL PROJECT, CITY OF LOS ANGELES, CALIFORNIA**

## **Paleontological Resources Assessment Report**

**Prepared for:**

CP LA Cold Storage Land, LLC  
1881 16th Street  
Denver, CO 80202

January 2022

**Prepared by:**

ESA  
626 Wilshire Blvd. Suite 1100  
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**Project Location:**

Los Angeles (CA) USGS 7.5-minute Topographic Quad  
Township 1 South, Range 13 West, Unsectioned

**Acreage:** North Site: 1.35 acres; South Site:  
5.98 acres; West Site: 0.32 acres

**Assessor Parcel Numbers (APN):** 5147-  
001-007, 5147-013-016, 5147-012-015,  
5147-011-015, 5147-011-016, and 5147-  
011-017

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# EXECUTIVE SUMMARY

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## Fourth & Central Project – Paleontological Resources Assessment Report

**Environmental Science Associates (ESA)** has prepared this paleontological resources assessment for the proposed Fourth & Central Project (Project) to identify potential impacts to paleontological resources in accordance with the California Environmental Quality Act (CEQA). The scope of work for this assessment included a geologic map and literature review, review of a site specific Preliminary Geotechnical Investigation report (Geotechnical Report) conducted for the Project, a paleontological resources records search through the Natural History Museum of Los Angeles County (LACM), and the recommendation of mitigation measures to reduce impacts from the Project to paleontological resources to a less than significant level.

The Project is comprised of three sites; the North Site, South Site and West Site, that collectively encompass a land area of approximately 7.6 acres (Project Site). The Project would demolish the existing surface parking and cold storage facility uses on the West and South Sites, respectively, and, if feasible, adaptively reuse a portion of the six-story cold storage building on the North Site, while demolishing the remaining warehouse uses. It is also possible that the six-story cold storage building would be demolished should its adaptive reuse prove infeasible. The Project would include a mix of residential, office, restaurant/retail, and hotel uses within 10 distinct buildings over the three Sites. The Project would provide surface and podium parking, as well as subterranean parking (up to four levels).

The paleontological records search conducted through the LACM indicates that there are no known fossil localities within Project Site but that older (Pleistocene age) geologic units in the vicinity of the Project Site have produced paleontological resources within 0.6 miles and two miles from the Project Site at depths between 20 to 43 feet below ground surface (bgs) and unknown depths. These localities have yielded fossil specimens of horse, pond turtle, ground sloth, mastodon, mammoth, camel, turkey, sabre-toothed cat, horse, deer, sharks, bony fish, and rays. Geologic mapping indicates the surface of the Project Site is underlain by Holocene-age alluvium (Qay2). The Qay2 alluvial unit was deposited less than 1,000 years ago. Older alluvium is exposed at the surface 1.5 miles east of the Project Site and it is therefore likely that older alluvium underlies the younger alluvium (Qay2) at the Project Site. The Geotechnical Report indicates that fill material extends from the surface up to 8 feet in depth, and the underlying alluvium extends the remainder of the tested depths up to 100.5 feet bgs; however, the Project's Geotechnical Report does not distinguish between younger alluvium from older alluvium.

The close proximity of uplifted, older Pleistocene age alluvium at the surface just east of the Project Site suggests that older alluvium likely underlies Qay2 within the Project Site at an unknown depth and, given the results of the LACM records search, these deposits have the potential to yield paleontological resources. Since excavations for the Project would extend to depths ranging from approximately 22 feet bgs to 64 feet bgs, the potential to encounter buried paleontological resources is considered moderate to high. As such, recommended mitigation measures, including retention of a Qualified Paleontologist, paleontological resources monitoring, and procedures to be followed in the event of the discovery of paleontological resources, are provided in the *Summary of Findings and Recommended Mitigation Measures* section of this report in order to reduce impacts to paleontological resources to a less than significant level under CEQA.

# FOURTH & CENTRAL PROJECT

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## Paleontological Resources Assessment Report

### Introduction

ESA has prepared this paleontological resources assessment for the Project to identify potential impacts to paleontological resources in accordance with CEQA. The scope of work for this assessment included a geologic map and literature review, review of site-specific Geotechnical Report conducted for the Project, a paleontological resources records search through the LACM, and the recommendation of mitigation measures to prevent potential impacts from the Project to significant paleontological resources, should they be encountered.

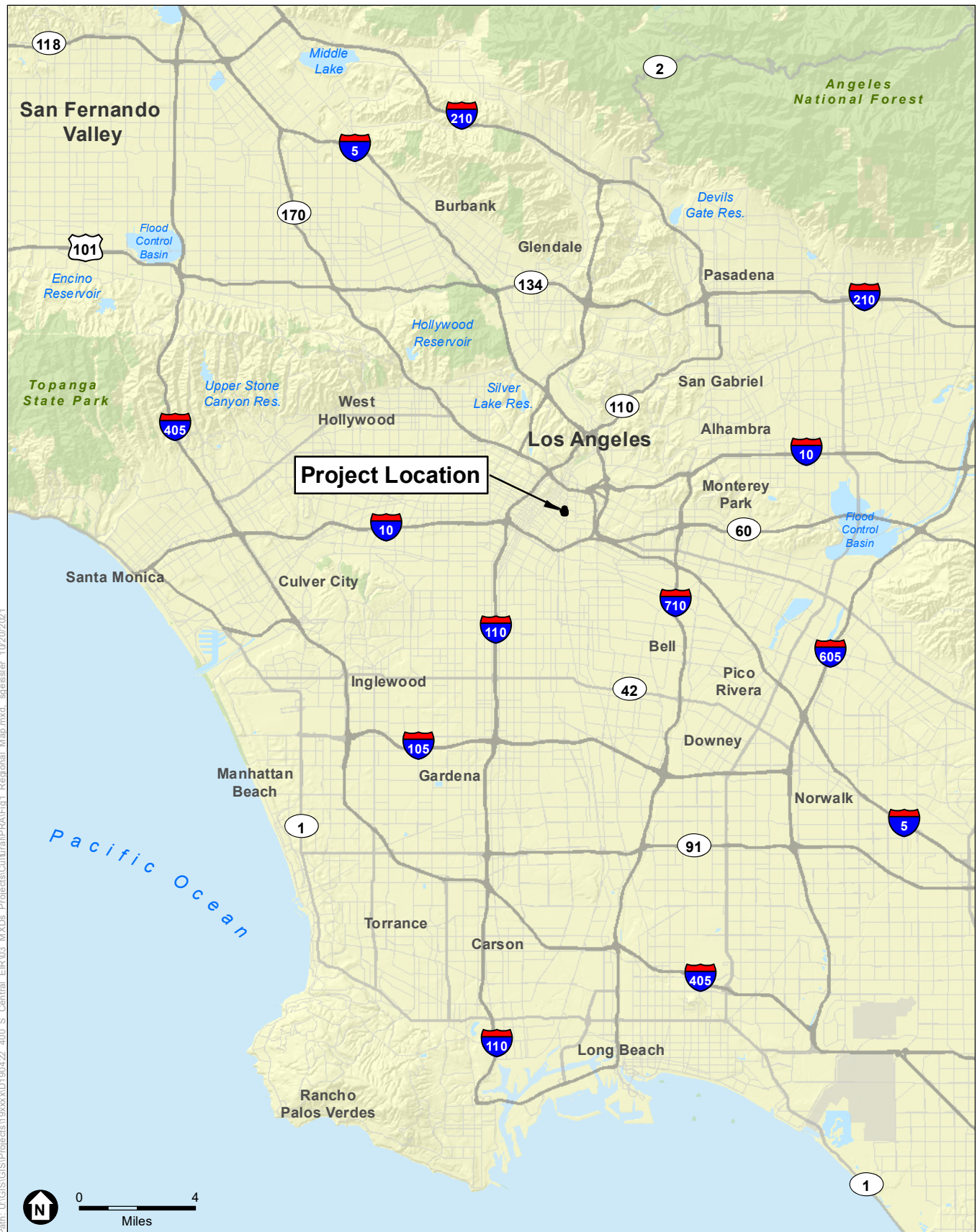
ESA personnel involved in the preparation of this report are as follows: Kyle Garcia, M.A., RPA Project Manager; Russell Shapiro, Ph.D., Principal Investigator and report author; Salpi Bocchieriyan, M.A., RPA report contributor; and Stephan Geissler, GIS specialist. Resumes of key personnel are included in **Appendix A** of this report.

### Project Location

The Project Site is made up of six (6) parcels, with a total land area of approximately 7.6 acres within the City of Los Angeles, California (**Figure 1**). The parcels that make up the Project Site are clustered across three City blocks and include the following three areas; the North Site, South Site and West Site. The North Site (1.35 acres within APN 5147-001-007) is located at the northeast corner of E. 4th Street and S. Central Avenue; the South Site (5.98 acres within APN 5147-013-016) is located south of E. 4th Street between S. Central Avenue and S. Alameda Street; and the West Site (0.32 acres within APNs 5147-012-015, 5147-011-015, -016, and -017) is situated at the northwestern intersection of Gladys Avenue and S. Central Avenue (**Figure 2**). The Project Site is located in an un-sectioned portion of Township 1 South, Range 13 West on Los Angeles, CA U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (**Figure 3**).

### Project Description

The North Site is currently developed with a six-story cold storage warehouse building and attached single-story warehouse. The six-story warehouse also includes a one-level basement, which is not counted as part of the six, above ground stories. Approximately 20 loading docks for the North Site are located along 4th Street and Central Avenue. The South Site is developed with a two-story cold storage building and a conjoining single-story office building. The South Site also includes 47 loading docks and paved surface parking with approximately 33 spaces that



SOURCE: ESRI

Fourth & Central Project

**Figure 1**  
Regional Map



SOURCE: ESRI Imagery.

Fourth & Central Project

**Figure 2**  
Project Location



serve the warehouse building. The West Site provides 39 parking spaces in a fenced, paved lot and is not improved with any buildings.

The Project would demolish the existing surface parking and cold storage facility uses on the West and South Sites, respectively, and, if feasible, adaptively reuse a portion of six-story cold storage building on the North Site, while demolishing the remaining warehouse uses. It is also possible that the six-story cold storage building would be demolished should its adaptive reuse prove infeasible. The Project would include a mix of residential, office, restaurant/retail, and hotel uses within 10 distinct buildings over the three Sites totaling approximately 2,318,534 square feet. The Project would include publicly accessible open space, including paseos passing between S. Central Avenue and S. Alameda Street, plazas, and pocket parks within the North and South Sites. The Project would provide 2,445 vehicle parking spaces within subterranean parking (up to four levels), surface and podium parking.

Overall, construction would include up to approximately 651,000 cubic yards (CY) of grading (cut), including 105,000 CY within the North Site, 534,000 CY in the South Site and 12,000 CY in the West Site, all of which would be exported from the Project Site. On the North Site, excavations would extend to approximately 57 feet bgs for the lowest foundations and approximately 64 feet bgs in isolated areas for elevator pits. On the South Site, excavations would extend to approximately 53 feet bgs for the lowest foundations and approximately 60 feet bgs in isolated areas for elevator pits. On the West Site, excavations would extend to approximately 22 feet bgs for the lowest foundations and approximately 29 feet bgs in isolated areas for elevator pits.

## Regulatory Framework

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value that are afforded protection under state laws and regulations. The following section summarizes the applicable state laws and regulations, as well as professional standards.

### California Environmental Quality Act

The State CEQA Guidelines (Title 14, Chapter 3 of the California Code of Regulations, Section 15000 *et seq.*), define the procedures, types of activities, individuals, and public agencies required to comply with CEQA. As part of CEQA's Initial Study process, one of the questions that must be answered by the lead agency relates to paleontological resources: "Will the proposed project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (State CEQA Guidelines, Appendix G, Section VII, Part f).

The loss of a significant paleontological resources which includes any identifiable fossil that is unique, unusual, rare, uncommon, diagnostically or stratigraphically important, and/or those that add to an existing body of knowledge in specific areas – stratigraphically, taxonomically, and/or regionally, would be a significant environmental impact. Direct impacts to paleontological resources primarily concern the potential destruction of nonrenewable paleontological resources and the loss of information associated with these resources. This includes the unauthorized collection of fossil remains. If potentially fossiliferous bedrock or surficial sediments are

disturbed, the disturbance could result in the destruction of paleontological resources and subsequent loss of information.

The CEQA threshold of significance for a significant impact to paleontological resources is reached when a project is determined to “directly or indirectly destroy a significant paleontological resource or unique geologic feature” (State CEQA Guidelines Appendix G, Section VII, Part f). In general, for project sites that are underlain by paleontologically sensitive geologic units, the greater the amount of ground disturbance, the higher the potential for significant impacts to paleontological resources.

## California Penal Code Section 622.5

California Penal Code Section 622.5 provides the following: “Every person, not the owner thereof, who willfully injures, disfigures, defaces, or destroys any object or thing of archeological or historical interest or value, whether situated on private lands or within any public park or place, is guilty of a misdemeanor.”

## California PRC Section 5097.5

California Public Resources Code (PRC) Section 5097.5 provides protection for paleontological resources on public lands, where Section 5097.5(a) states, in part, that:

*No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, paleontological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other paleontological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over the lands.*

## City of Los Angeles General Plan

### Conservation Element

The City’s General Plan Conservation Element (Conservation Element) recognizes the presence of paleontological resources within the city in Section 3: “Archeological and Paleontological” (II-3), specifically the La Brea Tar Pits (considered to be the best known and most abundant fossil locality in the general vicinity of the Project), 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 bonafide paleontologist to arrange for assessment of the potential impact and mitigation of potential disruption of or damage to the site.” Section 3 of the Conservation Element, adopted in September 2001, includes policies for the protection of paleontological resources. As stated therein, it is the City’s policy that paleontological resources be protected for historical, cultural research, and/or educational purposes. Section 3 sets as an objective the identification and protection of significant paleontological sites and/or resources known to exist or that are identified during “land development, demolition, or property modification activities.” Section 5 of the Conservation Element recognizes the City’s responsibility for identifying and protecting its cultural and

historical heritage. The Conservation Element establishes the policy to continue to protect historic and cultural sites and/or resources potentially affected by proposed land development, demolition, or property modification activities, with the related objective to protect important cultural and historical sites and resources for historical, cultural, research, and community educational purposes.<sup>1</sup>

## Society for Vertebrate Paleontology Standard Guidelines

The Society of Vertebrate Paleontology (SVP) Guidelines (SVP, 2010) outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, specimen preparation, identification, analysis, and curation. Most practicing professional vertebrate paleontologists adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically provided in its standard guidelines. Most state and local regulatory agencies accept and use the professional standards set forth by the SVP.

## Paleontological Resources Significance Criteria

As defined by the SVP (2010:11), significant nonrenewable 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).*

Numerous paleontological studies have further developed criteria for the assessment of significance for fossil discoveries (e.g., Eisenstraut and Cooper, 2002; Murphey and Daitch, 2007; Scott and Springer, 2003, etc.). 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.

<sup>1</sup> City of Los Angeles General Plan, Conservation Element, pages II-6 to II-9.

5. 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.

In summary, significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, uncommon, or diagnostically important (Eisenstraut and Cooper, 2002; Murphey and Daitch, 2007; Scott and Springer, 2003). Significant fossils can include remains of large to very small aquatic and terrestrial vertebrates or remains of plants and animals previously not represented in certain portions of the stratigraphy. Assemblages of fossils that might aid stratigraphic correlation, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, and paleoclimatology are also critically important (Scott and Springer, 2003; Scott et al., 2004).

## Paleontological Potential

Paleontological potential is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, the past history of the geologic unit in producing significant fossils, and the fossil localities recorded from that unit. Paleontological potential is derived from the known fossil data collected from the entire geologic unit and not just from one specific survey. In its “Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources,” the SVP (2010) defines four categories of paleontological sensitivity (potential) 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. Rock units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcanoclastic formations (e. g., ashes 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 sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstones, fine-grained marine sandstones, etc.).
- **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 located 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 nor impact mitigation measures relative to paleontological resources.

For geologic units with high potential, full-time monitoring is generally recommended during any project-related ground disturbance. For geologic units with low potential, monitoring will not generally be required. For geologic units with undetermined potential, field surveys by a qualified vertebrate paleontologist should be conducted to specifically determine the paleontological potential of the rock units present within the study area.

## Methods

The Project Site was the subject of thorough background research and analysis to assess its paleontological sensitivity. The research included geologic map and literature review, review of the Geotechnical Report prepared for the Project, and a paleontological records search conducted by the LACM.

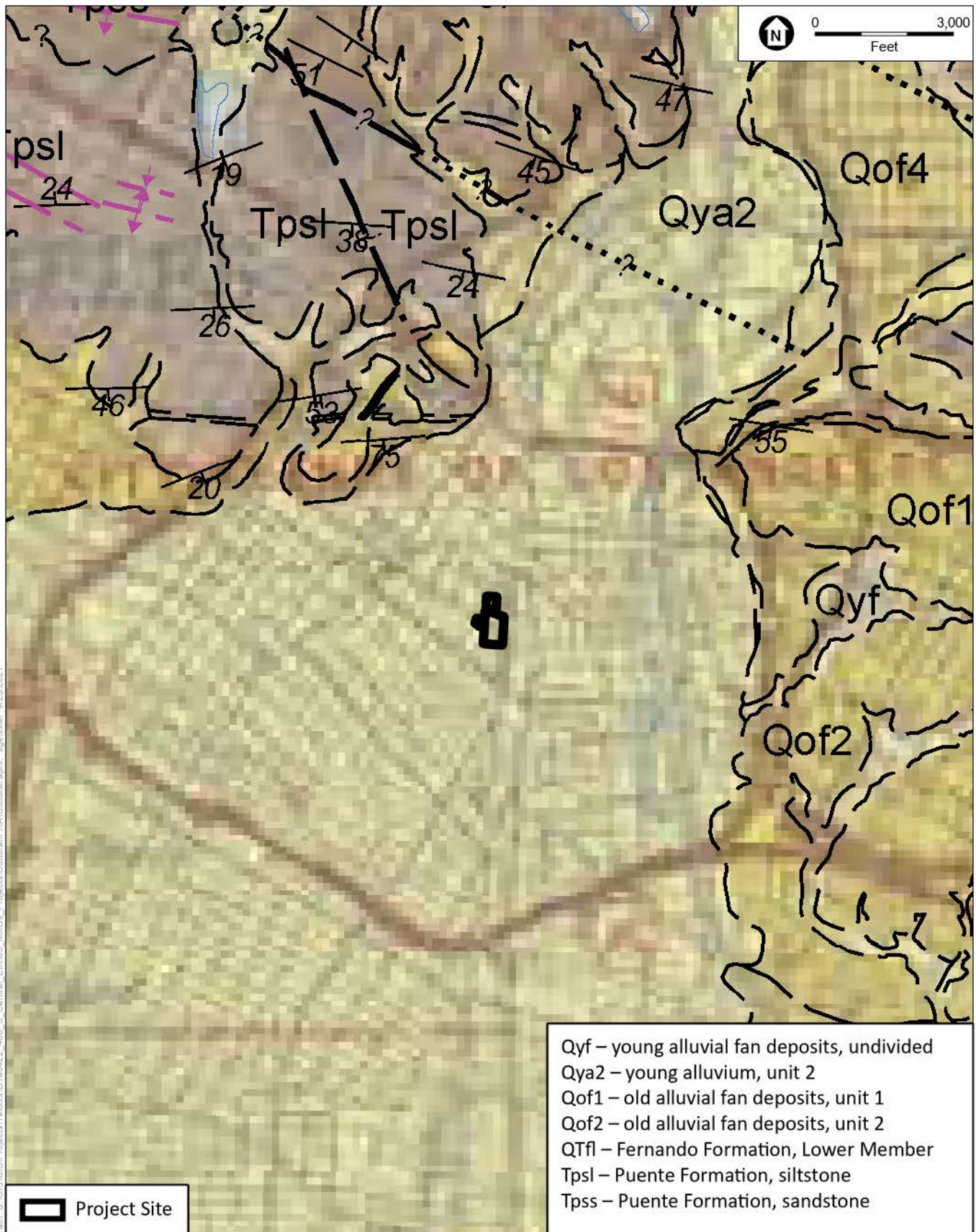
## Results

### Geologic Setting

The Project Site is situated in the northern portion of the Los Angeles Basin (Basin) and within the limits of the ancestral flood plain of the Los Angeles River (located approximately 0.6 miles to the east of the Project Site). The Basin is approximately 50 miles long and 20 miles wide (Yerkes et al., 1965; Ingersoll and Rumelhart, 1999). The Basin is within the Transverse Ranges physiographic-structural province, a series of east-west trending mountains and valleys that interrupt the northwest-southeast orientation of other major California ranges, including the Peninsular Ranges, Coast Ranges, and the Sierra Nevada. The Basin is bounded on the north by the Santa Monica Mountains, the Elysian, Repetto, and Puente Hills and on the east, and by the Santa Ana Mountains and San Joaquin Hills to the southeast. The Basin formed between 18 and 3 million years ago as a result of tectonic subsidence (Critelli et al., 1995). Continuous sedimentation into the Basin began during the middle Miocene around 13 million years ago, as thousands of feet of sediments were deposited in a marine environment (Yerkes et al., 1965). Deposition of terrestrial alluvial sediments commenced during the Pleistocene.

### Geologic Map and Literature Review

Geologic mapping by Wills et al. (2014) indicates that the surface of the Project Site is mapped as Holocene-age alluvium (Qay2) (**Figure 4**). Qay2 underlies areas flooded historically to a thickness of zero to 10 feet. As shown in Figure 4, older alluvium (Qof1 and Qof2) is exposed at the surface 1.5 miles east of the Project Site and it is therefore likely that older alluvium underlies the younger alluvium at the Project Site. The Geotechnical Report (below) does not distinguish between older and younger alluvium so the depth of this contact is unknown.



SOURCE: Preliminary Geologic Map, Wills et al. 2014; ESA, 2021.

Fourth & Central Project

**Figure 4**  
Geologic Map

## Geotechnical Investigations Review

A *Preliminary Geotechnical Investigation* (Geotechnical Report) for the Project Site prepared by Geocon West, Inc. (2021) was reviewed. The Geotechnical Report indicates that five borings were advanced (B1 through B5) at the three Sites and the results of borings demonstrate that the Project Site is underlain by artificial fill that overlies alluvial deposits. B1 is located within the northwest (NW) portion of the North Site. B2 is located within the south central (SC) portion of the West Site. B3 is situated within the northwest (NW) Portion of the South Site. B4 is located within the southeast (SE) portion of the South Site. B5 is located within the northwest (NW) portion of the South Site. In general, artificial fill was encountered to a maximum depth of 8 feet bgs at the North Site and to a maximum depth of 5 feet bgs at the South and West Sites.

## LACM Records Search

On July 22, 2021, ESA requested a database search from the LACM for records of fossil localities in and around the Project Site. The purpose of the museum records search was to: (1) determine whether any previously recorded fossil localities occur in the Project Site, (2) assess the potential for disturbance of these localities during construction, and (3) evaluate the paleontological sensitivity within the Project Site and vicinity. The LACM records search indicates that there are no known fossil localities within Project Site but a number of fossil localities have been previously recovered from the Puente Formation, the Fernando Formation, and unknown Pleistocene-age formations in the vicinity of the Project Site (Bell 2021). Since the Puente Formation and the Fernando Formation are not expected to occur at depth within the Project Site, only the localities from the unknown Pleistocene-aged formations are summarized in **Table 1**, below. The Pleistocene fossils (found approximately within 0.6 miles and two miles from the Project Site) listed below are likely to be sourced from older alluvium. The LACM records search results are included in **Appendix B** of this report.

**TABLE 1**  
**SUMMARY OF LACM FOSSIL LOCALITIES**

| Locality No.    | Formation                             | Taxa                                                                                                                      | Depth                                        |
|-----------------|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| LACM VP<br>1755 | Unknown<br>Formation<br>(Pleistocene) | Horse ( <i>Equus</i> )                                                                                                    | 43 feet below<br>ground surface              |
| LACM VP<br>2032 | Unknown<br>Formation                  | Mastodon ( <i>Mammot</i> )                                                                                                | 20-35 feet below<br>ground surface           |
| LACM VP<br>1023 | Unknown<br>Formation<br>(Pleistocene) | Sabertooth cat ( <i>Smilodon</i> ),<br>horse ( <i>Equus</i> ), deer ( <i>Odocoileus</i> ), Turkey<br>( <i>Meleagris</i> ) | Unknown<br>(excavations for<br>storm drains) |

SOURCE: Bell, 2021

## Paleontological Sensitivity Analysis

The literature and geologic mapping review, as well as the records search results, were used to assign paleontological sensitivity to the geologic units at surface and underlying the Project Site, following the guidelines of the SVP (2010):

**Fill Material:** As indicated by geotechnical testing, fill material is present at the surface of the Project Site. It is unclear as to where the fill material came from and so assigning an age is not possible. Given the fill is described as artificial and is likely the result of past grading or construction activities at the Project Site, it is unlikely to contain intact fossiliferous deposits. Therefore, this unit is assigned **No Potential** to contain paleontological resources.

**Qay2:** This Holocene alluvium is mapped as overlapping the entirety of the Project Site and dates to the Holocene from a period of 1,000 years ago to the present. Given its age, this alluvium is too young to contain fossil specimens and, therefore, has **Low Potential** to contain paleontological resources.

**Older Alluvium:** Older alluvium is exposed at the surface 1.5 miles east of the Project Site and it is therefore likely that older alluvium underlies the younger alluvium at the Project Site. As previously stated, the exact depth at which the alluvium becomes old enough to preserve fossils (i.e., >5,000 years old) is unknown at the Project Site. The closest study to identify the depth of this transition correlated well and boring logs from northwest and north of the Project Site, along US-110 and US-101 in downtown Los Angeles (Yerkes et al., 1965). This study found that the depth to older alluvial sediments was highly variable, ranging from 10 to 200 feet bgs (Yerkes et al., 1965). The LACM records search focused the depth more clearly relative to the Project Site and indicated previous fossil recoveries at depths of 20 feet bgs in the area (Bell, 2021). Given the lack of definitive information on the depth of the transition to high sensitivity sediments at the Project Site in the boring logs, an estimated minimum depth of 10 feet bgs is assumed on basic geological principles, using the depths from Yerkes et al. (1965) and the LACM fossil localities (Bell, 2021). Therefore, the potential to encounter underlying older alluvium at depth necessitates a ranking of **Low to High Potential**, increasing with depth.

## Summary of Findings and Recommended Mitigation Measures

The paleontological records search conducted through the LACM indicates that older (Pleistocene-age) geologic units in the vicinity of the Project Site have produced paleontological resources within 0.6 miles and two miles from the Project Site at depths between 20 to 43 feet bgs and unknown depths. These localities have yielded fossil specimens of horse, pond turtle, ground sloth, mastodon, mammoth, camel, turkey, sabre-toothed cat, horse, deer, sharks, bony fish, and rays. Geologic mapping indicates the surface of the Project Site is underlain by Holocene-age alluvium (Qay2). The Qay2 alluvial unit was deposited less than 1,000 years ago. The Geotechnical Report indicates that fill material, which is likely associated with prior development activities at the Project Site, extends from the surface up to 8 feet in depth, and the underlying alluvium extends the remainder of the tested depths up to 100.5 feet bgs. The proximity of uplifted, older Pleistocene-age alluvium at the surface 1.5 miles east of the Project Site suggests that older alluvium likely underlies Qay2 within the Project Site at an unknown depth and, given the results of the LACM records search, these deposits have the potential to yield paleontological resources. Since excavations for the Project would extend to depths ranging from approximately 22 feet bgs to 64 feet bgs, the potential to encounter buried paleontological resources is considered moderate to high during excavations 10 feet bgs or deeper. Mitigation Measures

PALEO-1 through PALEO-3 are recommended below to prevent potential impacts to significant paleontological resources, should they be encountered.

**MM PALEO-1:** Prior to the issuance of demolition permits, the Applicant shall retain a Qualified Paleontologist meeting the Society of Vertebrate Paleontology (SVP) Standards. The Qualified Paleontologist shall provide technical and compliance oversight of all work as it relates to paleontological resources, shall attend the Project kick-off meeting to go over the monitoring requirements, and shall be responsible for monitoring and overseeing paleontological monitors (meeting SVP standards) that will observe grading and excavation activities.

**MM PALEO-2:** Paleontological monitoring shall be conducted during construction excavations into undisturbed older alluvial sediments that exceed 10 feet in depth. Monitoring shall consist of visually inspecting fresh exposures of rock for larger fossil remains and, where appropriate, collecting wet or dry screened sediment samples of promising horizons for smaller fossil remains. The frequency of monitoring inspections shall be determined by the Qualified Paleontologist and shall be based on the rate of excavation and grading activities, the materials being excavated, and the depth of excavation, and if found, the abundance and type of fossils encountered. Full-time monitoring can be reduced to part-time inspections, or ceased entirely, if determined adequate by the Qualified Paleontologist. If a potential fossil is found, the paleontological monitor shall be allowed to temporarily divert or redirect grading and excavation activities in the area of the exposed fossil to facilitate evaluation of the discovery. An appropriate buffer area shall be established by the Qualified Paleontologist around the find where construction activities shall not be allowed to continue. Work shall be allowed to continue outside of the buffer area. At the Qualified Paleontologist's discretion, and to reduce any construction delay, the grading and excavation contractor shall assist in removing rock/sediment samples for initial processing and evaluation. If preservation in place is not feasible, the Qualified Paleontologist shall implement a paleontological salvage program to remove the resources from their location. Any fossils encountered and recovered shall be prepared to the point of identification and catalogued before they are submitted to their final repository. Any fossils collected shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County, if such an institution agrees to accept the fossils. If no institution accepts the fossil collection, they shall be donated to a local school or historical society in the area for educational purposes.

**MM PALEO-3:** Any significant fossils recovered during Project-related excavations shall be prepared to the point of identification and curated into an accredited repository. The Qualified Paleontologist shall prepare a final report summarizing the results of the monitoring and salvaging efforts, the methodology used in these efforts, as well as a description of the fossils collected and their significance. The report shall be submitted by the Applicant to the City and the Natural History Museum of Los Angeles County to signify the satisfactory completion of the Project and required mitigation measures.

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- Yerkes, R. F., T. H. McCulloh, J. E. Schollhamer, and J. G. Vedder. 1965. Geology of the Los Angeles Basin – an introduction. *Geological Survey Professional Paper* 420-A.
- Yerkes, R.F. 1997. Preliminary geologic map of the Los Angeles 7.5' quadrangle, southern California. U.S. Geological Survey Open File Report 96-86

# Appendix A

## **Personnel**



# Kyle Garcia, M.A., RPA

## Principal Archaeologist

### EDUCATION

M.A., Anthropology  
(Archaeology Option),  
California State  
University Los Angeles,

B.A., Anthropology,  
(Physical/ Biological  
Emphasis), University of  
California, Santa  
Barbara

### 18 YEARS EXPERIENCE

### CERTIFICATIONS/ REGISTRATION

Register of Professional  
Archaeologists

Riverside County  
Registered Archaeologist  
and Paleontologist

Orange County-Certified  
Archaeologist and  
Paleontologist

40-Hour HAZWOPER  
Training – Update, 2019

### PROFESSIONAL AFFILIATIONS

Society for American  
Archaeology

Society for California  
Archaeology

Pacific Coast  
Archaeological Society

Kyle Garcia has 18 years of experience in the archaeology and prehistory of southern California, with a specialization in faunal analysis. During his career, he has authored or contributed to more than 800 projects subject to the requirements of the California Environmental Quality Act, the National Environmental Policy Act (NEPA), and regulations implementing Section 106 of the National Historic Preservation Act (Section 106 of the NHPA). He is well-versed in the archaeological resources of California's coastal, interior, and island settings. He is skilled in evaluation historic and prehistoric archaeological resources; agency and Native American consultation; pedestrian surveys, testing and evaluation excavations as well as archaeological and paleontological construction monitoring, and laboratory processing. During his tenure, he has authored or contributed to more than 500 technical reports and sections to support all levels of CEQA and NEPA documents. Kyle's portfolio of projects includes energy, water, and transportation infrastructure as well as residential, commercial, mixed-use, institutional, and urban redevelopment serving public and private sector clients. Kyle has conducted archaeological work throughout California and is a certified archaeologist and paleontologist in Riverside and Orange counties.

## Representative Experience

**Archaeological/Paleontological Monitoring.** Kyle has managed more than 120 archaeological and/or paleontological construction monitoring projects in Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. His recent monitoring experience in Culver City for mixed-use development projects include Ivy Station, Culver Studios (9336 Washington Blvd), 8888 Washington Blvd, and 8777 Washington Blvd projects. His recent monitoring experience in the City of Los Angeles for mixed-use development projects include the Park Fifth Apartments (437 Hill St), Essex Hollywood (6250 Sunset Blvd), 6<sup>th</sup> and Virgil Project, 1500 Figueroa, 1340 Figueroa, and 10000 Santa Monica Blvd.

**Paleontology.** In addition to his archaeological work, Kyle has been cross-trained in paleontological mitigation monitoring and assisted in the excavations of a Miocene whale fossil near Irvine and a new species of extinct tuna in Laguna Niguel, California. Kyle has also managed or conducted more than 200 paleontological assessments and 40 paleontological monitoring projects throughout southern California. He has assisted ESA's paleontologists with the preparation of paleontological reports in compliance with CEQA and local paleontological guidelines, including guidelines for the Society for Vertebrate Paleontology.

**Large-Scale Development Projects.** Kyle directed the 1,400-acre field survey and the successful site recordation of over 150 prehistoric and historic archaeological resources per the Section 106 Process for a confidential project in

Riverside County; served as the Deputy Project Manager for the 240-acre Archaeological Treatment & Restoration Plan for The Cove project that was subject to Section 106, responsible for the field survey, Native American consultation, final report, and supervised the thorough recordation and documentation of over 350 significant artifacts. In Arizona, he led crews on a pedestrian survey and site recordation of more than 200 historic and prehistoric archaeological resources during a Class III Inventory on an 11,000-acre portion of the La Osa Ranch Project site in Pinal County.

**Water Infrastructure.** Kyle has performed the archaeological and paleontological resources surveys and assessments for a number of regional water infrastructure projects including the Reservoir No. 1 Reconstruction Project MND for Burbank; the Pasadena Groundwater Storage Program; and recycled water facilities projects for San Clemente, Pasadena, the Town of Rosamond, and Palmdale.

**Transportation Infrastructure.** Kyle is often sought after to conduct Peer Review services of controversial projects across southern California including the Needles Highway Safety Realignment Project for the County of San Bernardino, various infrastructure projects for Caltrans/San Bernardino Associated Governments, and the I-710 Corridor Project Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) for the City of Commerce.

In addition to road projects, Kyle has provided archaeological and paleontological services—cultural resources assessments and monitoring—on and around the Los Angeles International Airport (LAX). Among these include the cultural resources assessment of the proposed concrete pad/apron area and staging area within the southwest portion of LAX, known as the Southwest Remain Overnight Apron Project/West Aircraft Maintenance Area Project. He was also the ESA PCR cultural resources task manager for the EIR and Archaeological/Paleontological Monitoring for the LAX Central Utility Plant Replacement Project. Finally, Kyle was the PCR project manager for the archaeological and paleontological monitoring services during earthmoving operations associated with the development of the Crossfield Taxiway project. Monitoring was in compliance with the mitigation measures outlined in the Master Plan EIS/EIR pursuant to CEQA, NEPA, and Section 106.

**Energy Projects.** Kyle is well-versed in the potential effects of energy production projects on Southern California Archaeology through his service as an on-call consultant to Southern California Edison (SCE), where he has served as the Project Director and Manager for over 100 SCE projects and managed SCE purchase order contracts in excess of \$1.5 million. These projects were subject to requirements of CEQA, Section 106 of the NHPA, and other local ordinances. These projects included deteriorated pole replacements, conduit and vault installations, and distribution circuit installations (aboveground and underground) located throughout SCE's service area in Central and Southern California. Kyle not only managed the budgets and supervised the work for these projects but also conducted most of the record searches, surveys, report writing, site recordation, and client/agency coordination for these projects. In addition to his SCE work, Kyle was the project manager for a 150-acre ground-mounted solar



power project in San Bernardino County and assisted with a 245-acre confidential petroleum exploration project on California's Central Coast.

**Education Facilities.** Kyle's academic experience includes conducting cultural and paleontological records searches in support of an Initial Study/MND for the proposed John Thomas Dye School Improvement project in the Bel Air Community of the city of Los Angeles; the Long Beach Unified School District's District-Wide Cultural Resources Assessment; and the University High School Beautification project. In addition, Kyle has supervised ESA PCR staff paleontologists during paleontological monitoring services for the Stephen S. Wise Middle School Relocation project in the city of Los Angeles; he also supervised the subsequent fossil identification/analysis and final report preparation services for this project. These services have been conducted pursuant to a Mitigation Monitoring and Reporting Program that was established to implement the mitigation measures identified in the EIR for the project.

**Cultural Resources Sensitivity Training.** He is well-versed in conducting Cultural Resources Sensitivity Training Sessions to government staff, applicants, contractors, engineers, and construction personnel with regard to the procedures to implement in the event that archaeological or paleontological resources are encountered during construction.

**Geographic Information Systems.** Kyle has also gained valuable experience with recording historic and prehistoric archaeological sites with Garmin, Magellan, and sub-meter Trimble GeoXT Global Positioning System (GPS) units. He has worked with GIS software such as ArcPad, ArcGIS, and ArcView and developed methods for using these products to accurately and efficiently record archaeological sites.

**Presentations.** Kyle presented a paper at the 72nd Annual Meeting for the Society of American Archaeology Conference in Austin, Texas in 2007. The paper focused on prehistoric 'yoni' features encountered on a project site proposed to be developed in western Riverside County, California. The project was subject to requirements of CEQA and Section 106 of the NHPA. Kyle has also presented a poster at the Society of California Archaeology Conference in Fish Camp, California in 2016 titled *Urban Archaeology Strikes Again! - 250 Years of Los Angeles History and Archaeology Uncovered in One Downtown City Block*. Kyle also presented a paper on historic archaeology and CEQA at a 2015 workshop for the California Preservation Foundation in Los Angeles.



# Russell S. Shapiro, PhD

## Principal Investigator

### EDUCATION

Ph.D., Geological Sciences, University of California, Santa Barbara, 1998  
B.S., Geology, Humboldt State University, 1992

### 25 YEARS EXPERIENCE

### CERTIFICATIONS/ REGISTRATION

U.S. Fish and Wildlife Cultural Resources Use Permit  
U.S. Forest Service Cultural Resources Use Permit  
Bureau of Land Management Cultural Resources Use Permit  
Wilderness and Remote First Aid (Red Cross Certified)

### PROFESSIONAL AFFILIATIONS

Geobiology Society; Treasurer  
Society for Sedimentary Geology (SEPM); Vice-President  
Society for Vertebrate Paleontology

As a Principal Investigator, Dr. Shapiro has been involved in review of paleontological resource reports and evaluating proposed mitigation plans. Dr. Shapiro researches and prepares environmental impact reports regarding cultural resources (fossils), conducts field (geological and paleontological) surveys, and oversees ground disturbance at construction sites for Environmental Quality compliance (CEQA, NEPA, and the Paleontological Resources Preservation Act). As a Qualified Paleontologist, Dr. Shapiro has also reviewed resource planning documents for several counties in California and was the lead on the Bureau of Land Management's assessment of fossil resources of Northern California.

In his academic role as Professor of Geology, Dr. Shapiro teaches several paleontology courses including "Applied Paleontology" which is a modified "Cultural Resources" course, focusing on budgeting, CEQA and NEPA regulations, field surveys, GIS projections, fossil recovery, and curation. He also teaches in the annual Field Camp courses and manages the rock preparation lab and maintains the microscopes.

## Relevant Experience

**ReneSola Gentry Solar Project, Paleontological Resource Assessment Report, Lincoln, California.** *Principal Investigator, Mapping.* Literature, geological map, and museum review for fossil resources. Field mapping of entire property. Final product included a mitigation and monitoring plan.

**Paleontological Sensitivity Analysis Report, Elk Grove, California; Pacific Gas and Electric.** *Principal Investigator.* Literature, geological map, and air photo archival report on the potential fossil yield for a proposed pipeline. Recommendations based on searches of museum collections of relevant geological formations. Deliverables consisted of a sensitivity report and appendix of known fossil occurrences by taxa and location.

**Mojave Solar Project Cultural Services; San Bernardino County, California; CH2M Hill.** *Principal Investigator.* Reviewed technical report; advised on scientific analyses.

**El Camino Real Bridge Replacement Environmental Services; San Luis Obispo County, California, Quincy Engineering.** *Principal Investigator.* Reviewed technical report for CEQA/NEPA documentation, technical studies, and permitting, for the replacement of the El Camino Real bridge over Santa Margarita Creek in Atascadero.

**San Bernardino County General Plan Update: Paleontological Resources Technical Report.** *Primary Reviewer.* External reviewer for general plan update. Involved assessing all geological formations in San Bernardino County and museum records of significant fossils.

## Recent Significant Excavations

**Miocene Vertebrates of the Sheldon Wildlife National Refuge.** Oversaw operations to conduct significant collection of Miocene-age fossils from volcanic sediments for the U.S. Fish and Wildlife Service. Duties included field collection and high-resolution GPS mapping, fossil preparation and identification, curation at the Gateway Science Museum.

**Eocene Horses from Black Butte Lake Reservoir.** Field jacketing and preparation of fossil horse skull material from the reservoir under the direction of the U.S. Army Corps of Engineers. Fossils were prepared, identified, and returned to the Army Corps for public display.

**Pleistocene Camelid from Nevada.** This project grew out of a paleontological resource assessment field survey. During the survey, a semi-articulated rear leg of a late Pleistocene camelid was collected and prepared. A manuscript was published in 2016.

## Publications and Presentations

Shapiro, R. S., 2016, Camelid record of Mesquite Lake, California: impact of earliest Holocene climate change in Reynolds, R. E., ed., *Going LOCO investigations along the Lower Colorado River*, 2016 Desert Symposium Field Guide and Proceedings, p 41-47.

Shapiro, R. S. and Konhauser, K. O., 2014, Hematite-coated microfossils: Ecological fingerprint or taphonomic oddity of the Paleoproterozoic? *Geobiology*, v. 13, p. 209-224.

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Shapiro, R. S., Fricke, H., and Fox, K., 2009, Dinosaur-bearing oncoids from ephemeral lakes of the Lower Cretaceous Cedar Mountain Formation, Utah: *PALAIOS*, v. 24, p. 51-58.

Shapiro, R. S., and Rowland, S. M., 2002, Fossil collecting in southern Nevada in Rowland, S. M. and Orndorff, R. L., eds., *Geology of the Southern Nevada Region: National Association of Geoscience Teachers, Far Western Section Spring Field Conference Guidebook*, p. 96-99.

Shapiro, R. S., 1998, Paleogene-Early Neogene macrofossils of southwestern Santa Cruz Island in Weigand, P. W., ed., *Contributions to the Geology of the Northern Channel Islands, Southern California: Pacific Section, American Association of Petroleum Geologists*, MP-45, p. 123-132.

# Appendix B

## **LACM Records Search**