Appendix F

Paleontological Identification Report

Final

LA RIVER PHASE IV BIKE PATH PROJECT

Paleontological Identification Report
City of Los Angeles, County of Los Angeles California

Prepared for
Department of Public Works
Bureau of Engineering
1149 S. Broadway, Suite 700
Los Angeles, CA 90015-2213

November 2024

ESA

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November 2024

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SUMMARY OF FINDINGS

The City of Los Angeles Department of Public Works, Bureau of Engineering (BOE) as lead agency under the California Environmental Quality Act (CEQA) and the Los Angeles Department of Transportation (LADOT) as project proponent, proposes to implement the Los Angeles River Phase IV Bike Path Project (Project), which would construct a new multi-use trail segment (Project area) along the south side of the Los Angeles River from the existing western terminus of the Los Angeles River Bikeway located just to the west of Riverside Drive westward to approximately 200 feet east of Forest Lawn Drive in the Hollywood Community Plan area of the City of Los Angeles.

Environmental Science Associates (ESA) conducted a paleontological resources assessment of the Project from August through September of 2024 to determine the potential impacts to paleontological resources associated with the Project for the purpose of complying with CEQA and the guidelines set forth in the California Department of Transportation (CalTrans) Standard Environmental Reference (SER) for paleontological studies.

The Natural History Museum of Los Angeles County (LACM) completed paleontological resources records searches indicating that no fossils were found in the Project area; however, fossils have been recovered from 20-170 feet below ground surface near the Project. The Project will be developed upon young valley alluvium (Qya) and a younger alluvial fan (Qyf) based on mapping by Bedrossian et al. (2012). These units are too young to host scientifically-significant fossils. Furthermore, borings conducted during excavation for the geotechnical report prepared by GED (2023) for the Project (presented in section *2.0 Environmental Setting* of this report) showed that artificial fill overlies the entire area to a depth of approximately 10 feet. Therefore, excavations associated with the proposed Project will not have a significant impact on paleontological resources and no further mitigation is recommended.

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LA RIVER PHASE IV BIKE PATH PROJECT

Paleontological Identification Report

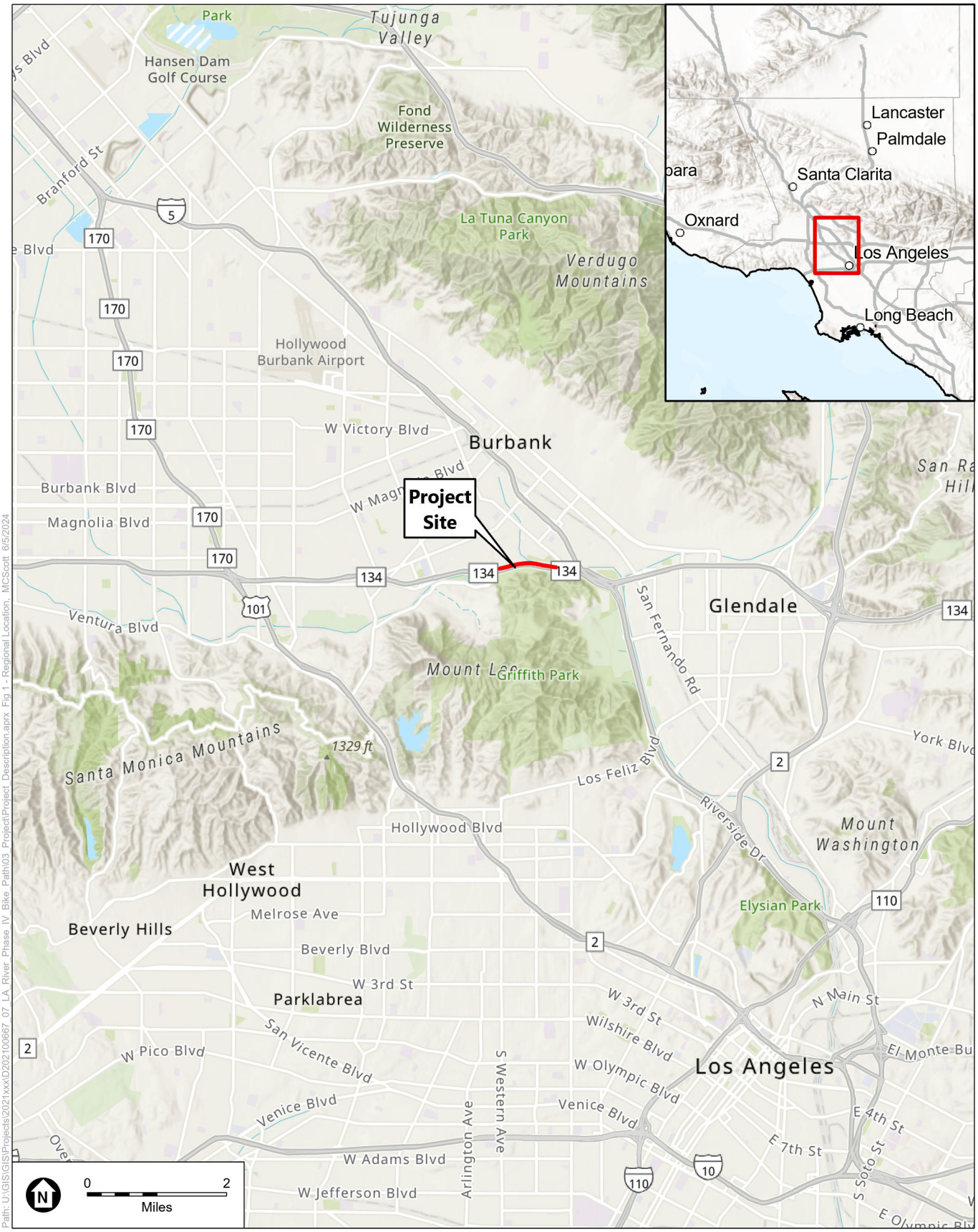
1.0 Introduction

This Paleontological Resources Assessment Report documents the methods and results of a paleontological resources assessment completed for the LA River Phase IV Bike Path Project (Project). The Project would construct a new multi-use trail segment along the south side of the Los Angeles River for an approximately length of 4,600 feet.

1.1 Project Location and Description

The Project location is in the Hollywood Community Plan area within the central portion of the City of Los Angeles in Los Angeles County, within the Hollywood Community Plan area. It is bordered by the River, Los Angeles Equestrian Center, Bette Davis Picnic Area and City of Burbank to the north; Riverside Drive and the City of Glendale to the east; State Route 134 (134 Freeway) and Griffith Park to the south; and Forest Lawn Drive and the City of Burbank to the west (**Figures 1 and 2**)**.** The Project area is an approximately one-mile alignment along an existing paved service road owned by the Los Angeles County Flood Control District and under the jurisdiction of the U.S. Army Corps of Engineers (USACE). The road is currently accessible only to pedestrians, cyclists, and equestrian users via an existing pedestrian/equestrian bridge to the west of the alignment and a tunnel beneath the 134 Freeway that connects to Griffith Park/Zoo Drive to the south. The eastern terminus of the alignment includes a locked gate which is also the western terminus of the existing Los Angeles River Bikeway segment to the east of the Project area. The western terminus of the Project alignment is located approximately 200 feet east of the northern terminus of Forest Lawn Drive.

The City of Los Angeles Department of Public Works, Bureau of Engineering (BOE) as lead agency under CEQA, and the Los Angeles Department of Transportation (LADOT) as project proponent, proposes to implement the Los Angeles River Phase IV Bike Path Project (Project), which would construct a new multi-use trail segment along the south side of the Los Angeles River (River) from the existing western terminus of the Los Angeles River Bikeway located just to the west of Riverside Drive westward to approximately 200 feet east of Forest Lawn Drive in the Hollywood Community Plan area of the City of Los Angeles. The total length of the Project is just under one mile (approximately 4,600 feet). The trail segment would include a new paved path on the northern side of the proposed trail alignment for use by pedestrians and cyclists, an equestrian-only unpaved trail on the south side of the alignment, and associated retaining walls, concrete fencing, street lighting path lighting, and limited utility relocations.

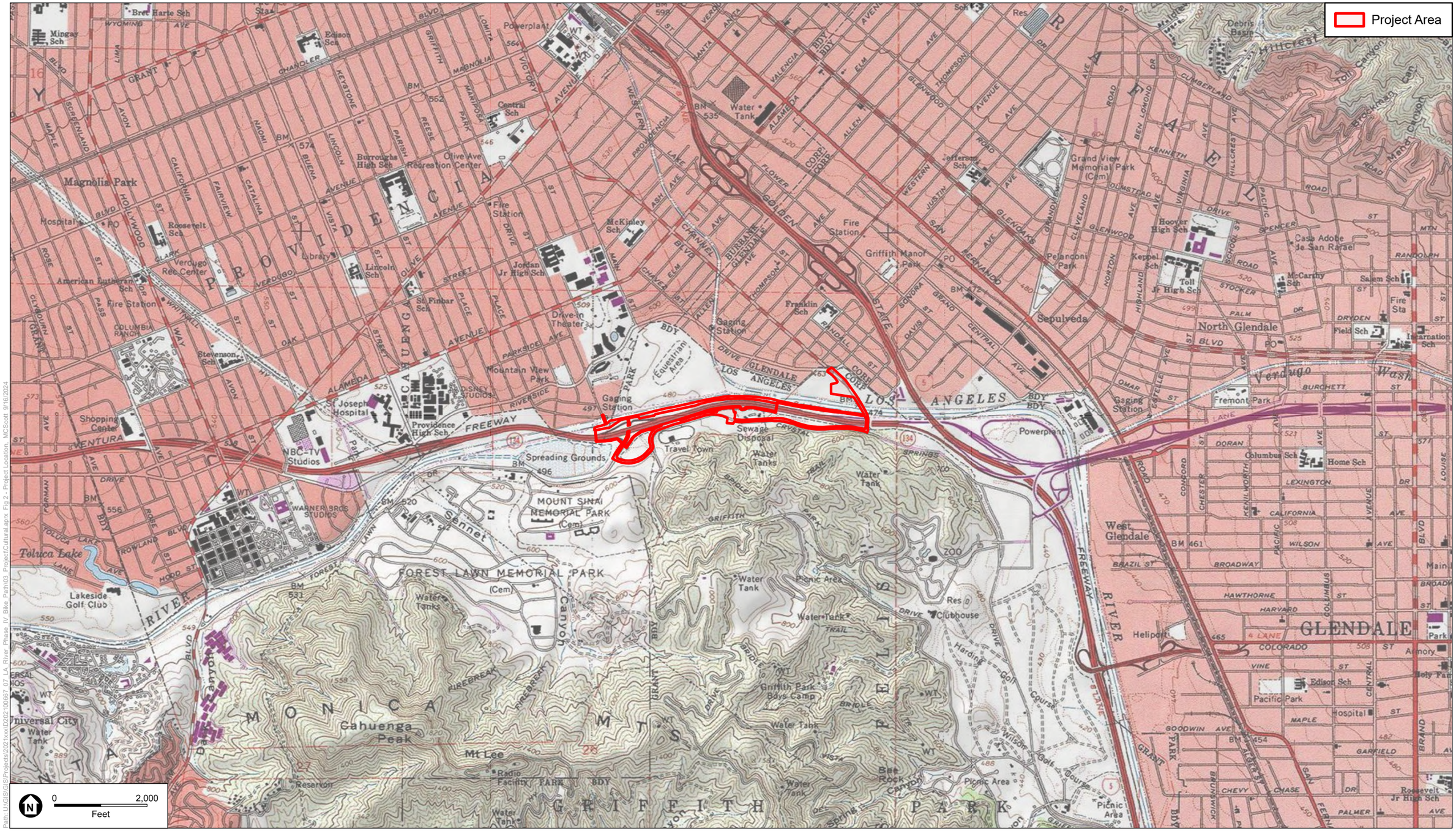


SOURCE: ESA, 2023

Los Angeles River Phase IV Bike Path Project

Figure 1
Regional Location

ESA



SOURCE: USGS Topographic Series (Burbank, CA); ESA, 2024

City of Los Angeles LA River Phase IV Bike Path

Figure 2
Project Location

ESA

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The purpose of the Project is to provide recreational opportunities and bicyclist connectivity in the Hollywood Community Planning Area. The proposed Project would connect the existing Los Angeles River Bikeway and close existing bikeway gaps along the River. The proposed Project would provide connections to the active transportation network throughout the region and provide new pedestrian, bicycle, and equestrian access and connectivity to transit, residential homes, schools, jobs, parks and recreational facilities, and other community-serving amenities for the surrounding communities. The Project is a key component of the City's effort to revitalize the River with increased access, amenities, recreational opportunities, and stormwater management. The City of Los Angeles Department of Transportation (LADOT) is working with partner agencies towards creating a continuous, paved bikeway along the entire length of the River, from the headwaters in West San Fernando Valley to the Long Beach Harbor.

Currently, access to the LA River and its bikeways and trails is highly variable along the 51-mile stretch of the Los Angeles River. In the proposed Project area, multi-use trails and Class I bikeways are located to the east in the Narrows Riverwalk area.

The Los Angeles Equestrian Center is located on the north side of the river and provides a 75-acre complex featuring areas for equestrian events, over 500 boarding stalls, along with access to the Griffith Park equestrian trails. In addition to the Los Angeles Equestrian Center, various private stables provide equestrian trail riding access including Circle K Stables and Bar S Stables, among others. These stables are adjacent to the river and the trails that cross the river and provide access to the wide network of trails throughout Griffith Park.

The primary objectives of the proposed Project are to:

- Extend the Los Angeles River Bikeway by approximately one mile from its current western terminus near Riverside Drive;
- Provide new equestrian trail facilities and facilitate connections to nearby off-site equestrian facilities including the Los Angeles Equestrian Center via an existing bridge (Mariposa Bridge) to the west and Griffith Park Main Trail via an existing tunnel (Tunnel 6) to the east;
- Expand opportunities for non-motorized mobility by pedestrians, cyclists, and equestrian users in the area; and
- Minimize disturbance to, and maintain the full function of, the LA River floodway channel.

1.2 Scope of Study and Personnel

ESA conducted a paleontological resources assessment of the Project from August to September of 2024. This assessment was conducted by ESA to determine the potential impacts to paleontological resources associated with the Project for the purpose of complying with CEQA and the guidelines set forth in the California Department of Transportation (CalTrans) Standard Environmental Reference (SER) for paleontological studies. The scope of work for this assessment included a paleontological resources records searchat the Natural History Museum of Los Angeles County (NHMLAC), geologic literature and geologic map review, a sensitivity determination, and preparation of this report.

This report presents the findings of an in-depth paleontological resources assessment and is intended to satisfy the cultural resource needs of CEQA and the CalTrans paleontological resource guidelines. ESA

personnel involved in this assessment included Dr. Russell Shapiro, Ph.D., and Cultural Resources Specialists, Sara Dietler and Fatima Clark. Dr. Shapiro has 25 years experience as a professional paleontologist and over 30 years experience in California geology and paleontology. Project management was overseen by Ms. Dietler. The literature review was conducted by Dr. Shapiro. Dr. Shapiro and Ms. Clark compiled the report. Personnel qualifications of key personnel are provided in Appendix A.

2.0 Environmental Setting

The Project is located within a developed urban setting surrounded by a variety of land uses including numerous public streets and the Ventura Freeway, State Route 134 (SR 134), single- and multi-family residential uses, recreational uses including Griffith Park, the Bette Davis Picnic Area, and the existing Los Angeles River Bikeway, and equestrian uses including the Los Angeles Equestrian Center and trails. The Los Angeles River flood control channel (Channel), which is characterized by concrete walls (both sloped/trapezoidal and vertical) and both concrete and unlined/unpaved channel bottom in the Project area, abuts the northern boundary of the Project alignment along the majority of its length. However, the Project alignment is set back from the Channel edge at various points along the alignment, with distances ranging from 0 to over 20 feet along the north side of the trail segment. The Channel is largely devoid of vegetation or other notable features, with the exception of at the eastern end of the Project alignment just west of the Riverside Drive bridge, where the soft-bottom Channel allows for the growth of riparian vegetation, including willows and various trees, including oak trees within the Channel itself.

The site topography generally slopes downward along the alignment from Forest Lawn Drive to Riverside Drive at 492 feet above mean sea level (MSL) to 472 MSL. On the west side of the Project (where retaining walls are proposed under the Project), the site mildly slopes from the freeway from approximately 488 to 496 MSL downward towards the existing flat 2-inch-thick asphalt service road to approximately 488 to 492 MSL. It then slopes downward toward the top of the channel at an elevation of approximately 480 MSL. Portions of the pavement show distress including cracking and depressions, and landscaping exists along both sides of the existing service road.

The Project area lies alongside the Los Angeles River channel along the northern piedmont of the Santa Monica Mountains. The Santa Monica Mountains are part of the east-west trending Transverse Ranges which lie along the northern border of the Los Angeles Basin. Uplift of the Transverse Ranges as well as the Santa Ana Mountains to the south led to the downdropping of deep basins that have accumulated alluvium eroded from the mountains over the past approximately 15 million years. These basins now form the flat-bottomed valleys such as the San Gabriel and San Fernando valleys. These alluvial deposits are seen as older, abandoned terraces and active fans and floodplains.

Analysis of drill cores for the initial geotechnical report (GED 2023) prepared for the Project showed the Project area is underlain by fill up to 12 feet below ground surface (bgs) in all borings. Below the fill, the borings are dominantly poorly graded sand with silt and silty sand to 20-37 feet bgs. Plant roots were noted at depths down to 20 feet bgs. The sediments coarsen below this level to primarily gravels. No bedrock or lithified sediments were encountered during boring operations.

3.0 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 provided by the Society of Vertebrate Paleontology (SVP, 2010).

3.1 State Regulations

California Environmental Quality Act

The CEQA Guidelines (Title 14, Chapter 3 of the California Code of Regulations, Section 15000 *et seq*.), are prescribed by the Secretary of Resources to be followed by state and local agencies in California in their implementation of the CEQA. Appendix G of the CEQA Guidelines includes an Environmental Checklist Form with questions that may be used by public agencies in their assessment of impacts on the environment. The question within Appendix G that relates to paleontological resources states: "Will the proposed project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" The City of Los Angeles Department of Public Works, BOE uses this question as its threshold of significance for determining whether impacts of paleontological resources are significant. CEQA protects paleontological resources by requiring an assessment of a project's potential paleontological impacts.

Public Resources Code Section 5097.5 and Section 30244

Other state requirements for paleontological resource management are included in PRC Section 5097.5 and Section 30244. These statutes prohibit the removal of any paleontological site or feature from public lands without permission of the jurisdictional agency, define the removal of paleontological sites or features as a misdemeanor, and require reasonable mitigation of adverse impacts to paleontological resources from developments on public (state, county, city, district) lands.

3.2 Society for Vertebrate Paleontology

The SVP has established standard guidelines (SVP, 2010) that outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. 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 regulatory agencies with paleontological resource-specific Laws, Ordinances, Regulations, and Standards (LORS) accept and use the professional standards set forth by the SVP.

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).*

Based on the significance definitions of the SVP (2010), all identifiable vertebrate fossils are considered to have significant scientific value. This position is adhered to because vertebrate fossils are relatively uncommon, and only rarely will a fossil locality yield a statistically significant number of specimens of the same genus. Therefore, every vertebrate fossil found has the potential to provide significant new information on the taxon it represents, its paleoenvironment, and/or its distribution. Furthermore, all geologic units in which vertebrate fossils have previously been found are considered to have high sensitivity. Identifiable plant and invertebrate fossils are considered significant if found in association with vertebrate fossils or if defined as significant by project paleontologists, specialists, or local government agencies.

A geologic unit known to contain scientifically significant fossils is considered to be "sensitive" to adverse impacts if there is a high probability that earth-moving or ground-disturbing activities in that rock unit will either directly or indirectly disturb or destroy fossil remains. Paleontological sites 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).

Fossils are contained within surficial sediments or bedrock, and are therefore not observable or detectable unless exposed by erosion or human activity. Therefore, without natural erosion or human-caused exposure, paleontologists cannot know either the quality or quantity of fossils. As a result, even in the absence of surface fossils, it is necessary to assess the sensitivity of rock units based on their known potential to produce significant fossils elsewhere within the same geologic unit (both within and outside of the study area), a similar geologic unit, or based on whether the unit in question was deposited in a type of environment that is known to be favorable for fossil preservation. Monitoring by experienced paleontologists greatly increases the probability that fossils will be discovered during ground-disturbing activities and that, if the fossils are significant, that successful mitigation and salvage efforts may be undertaken.

4.0 Significance Criteria and Sensitivity Determination

4.1 Significance Criteria

If a paleontological resource is identified within the Project area that cannot be avoided, then CalTrans SER stipulates that it is necessary to determine the resource's significance or scientific importance before any mitigation measures are proposed. This may be stated for a particular fossil species, fossil assemblage, or for a rock unit as a whole. There are two generally recognized types of paleontological significance:

National - a National Natural Landmark eligible paleontological resource is an area of national significance (as defined under 36 CFR 62.2) that contains an outstanding example of fossil evidence of the development of life on earth. This is the only codified definition of paleontological significance.

Scientific - definitions of a scientifically significant paleontological resource can vary by jurisdictional agency and paleontological practitioner.

According to CalTrans SER for Paleontology (CalTrans, 2014, accessed online August 16, 2024), "scientifically significant paleontological resources are identified sites or geologic deposits containing individual fossils or assemblages of fossils that are unique or unusual, diagnostically or stratigraphically important, and add to the existing body of knowledge in specific areas, stratigraphically, taxonomically, or regionally" (CalTrans, 2014). "Particularly important are fossils found in situ (undisturbed) in primary context (e.g., fossils that have not been subjected to disturbance subsequent to their burial and fossilization). As such, they aid in stratigraphic correlation, particularly those offering data for the interpretation of tectonic events, geomorphological evolution, paleoclimatology, the relationships between aquatic and terrestrial species, and evolution in general. Discovery of in situ fossil bearing deposits is rare for many species, especially vertebrates. Terrestrial vertebrate fossils are often assigned greater significance than other fossils because they are rarer than other types of fossils. This is primarily due to the fact that the best conditions for fossil preservation include little or no disturbance after death and quick burial in oxygen depleted, fine-grained, sediments. While these conditions often exist in marine settings, they are relatively rare in terrestrial settings (e.g., as a result of pyroclastic flows and flashflood events). This has ramifications on the amount of scientific study needed to adequately characterize an individual species and therefore affects how relative sensitivities are assigned to formations and rock units" (CalTrans, 2014).

4.2 Sensitivity Determination

Note that significance may also be stated for a particular rock unit, predicated on the research potential of fossils suspected to occur in that unit. Such significance is often stated as "sensitivity" or "potential." In most cases decisions about how to manage paleontological resources must be based on this potential because the actual situation cannot be known until construction excavation for the project is underway. Caltrans uses the following tripartite scale:

High Potential - Rock units which, based on previous studies, contain or are likely to contain significant vertebrate, significant invertebrate, or significant plant fossils. These units include, but are not limited to, sedimentary formations that contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. These units may also include some volcanic and low-grade metamorphic rock units. Fossiliferous deposits with very limited geographic extent or an uncommon origin (e.g., tar pits and caves) are given special consideration and ranked as highly sensitive. High sensitivity includes the potential for containing: 1) abundant vertebrate fossils; 2) a few significant fossils (large or small vertebrate, invertebrate, or plant fossils) that may provide new and significant taxonomic, phylogenetic, ecologic, and/or stratigraphic data; 3) areas that may contain datable organic remains older than Recent, including Neotoma (sp.) middens; or 4) areas that may contain unique new vertebrate deposits, traces, and/or trackways. Areas with a high potential for containing significant paleontological resources require monitoring and mitigation.

Low Potential - This category includes sedimentary rock units that: 1) are potentially fossiliferous, but have not yielded significant fossils in the past; 2) have not yet yielded fossils, but possess a potential for containing fossil remains; or 3) contain common and/or widespread invertebrate fossils if the taxonomy, phylogeny, and ecology of the species contained in the rock are well understood. Sedimentary rocks expected to contain vertebrate fossils are not placed in this category because vertebrates are generally rare

and found in more localized stratum. Rock units designated as low potential generally do not require monitoring and mitigation. However, as excavation for construction gets underway it is possible that new and unanticipated paleontological resources might be encountered. If this occurs, a Construction Change Order (CCO) must be prepared in order to have a qualified Principal Paleontologist evaluate the resource. If the resource is determined to be significant, monitoring and mitigation is required.

No Potential - Rock units of intrusive igneous origin, most extrusive igneous rocks, and moderately to highly metamorphosed rocks are classified as having no potential for containing significant paleontological resources. For projects encountering only these types of rock units, paleontological resources can generally be eliminated as a concern when the Preliminary Environmental Analysis Report (PEAR) is prepared and no further action taken.

If a paleontological resource is determined to be significant, of high sensitivity, or of scientific importance, and the project impacts it, a mitigation program must be developed and implemented. Mitigation can be initiated prior to, and/or during, construction.

5.0 Methods and Results

5.1 Paleontological Resources Records Search

On July 11, 2024, ESA commissioned a paleontological records search through the Vertebrate Paleontology Section at the LACM in Los Angeles, California. The record search entailed an examination of current geologic maps and known fossil localities inside and within the general vicinity of the Project area. Results of the record search will indicate whether or not there are previously recorded paleontological resources within the Project area that require evaluation and treatment. The results also provide a basis for assessing the sensitivity of the Project area for additional and buried paleontological resources.

Results of the paleontological resources records search conducted by the LACM indicated that no fossil localities lie directly within the Project area; however, several fossil localities were identified nearby from the same sedimentary deposits that occur near the Project area (**Table 1**) (Bell, 2024).

TABLE 1
LACM FOSSIL LOCALITIES

Locality Number	Formation	Taxa	Depth
LACM VP 6970	Old alluvium (pebble - gravel; sand; silt & clay)	Ground Sloth (*Glossotherium*); Camel (*Camelops*); Bison (*Bison*)	60-80 ft bgs
LACM VP 6386	Unknown formation (early Holocene; sandy mudstone)	rodent (Rodentia)	60 ft bgs
LACM VP 1146	Unknown formation (Pleistocene)	Horse (*Equus*)	160-170 feet bgs
LACM VP 3263, 6208	Unknown formation (Pleistocene)	Bison (*Bison*), horse family (Equidae)	20 ft bgs

SOURCE: LACM, 2024

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

Fossil locality LACM VP 6970 yielded fossil specimens of ground sloth (*Glossotherium*); camelid (*Camelops*); and bison (*Bison*) within Old alluvium deposits at depths between 60 and 80 feet bgs. Fossil locality LACM VP 6386 produced a fossil specimen of rodent (Rodentia) within early Holocene deposits (sandy mudstone) at 60 feet bgs. Fossil locality LACM VP 1146 yielded a fossil specimen of horse (*Equus*) within Pleistocene deposits at depths between 160 and 170 feet bgs. Fossil localities LACM VP 3263 and 6208 produced fossil specimens of bison (*Bison*), horse family (Equidae) within Pleistocene deposits at 20 feet bgs (Bell, 2024).

5.2 Literature and Geologic Map Review

Dr. Shapiro conducted a literature and geologic map review to identify any additional information that would assist in determining the geological setting of the Project area and whether additional paleontological resources have been identified in the Project area (**Figure 3**). As the Project lies entirely on surficial deposits filling the valley, the map of Bedrossian et al. (2012) was used as the primary source for this report.

According to mapping by Bedrossian et al. (2012), the Project lies primarily on young alluvial valley deposits (Qya) related to the ancient Los Angeles River and the confluence with the Verdugo Wash. The western portion of the Project intersects young alluvial fans (Qyf) which dominate the broader San Fernando Valley. The only bedrock potentially impacted by the Project is Mesozoic granite (gr). Neogene-age sandstone (Tss) lies south of the granite across the south-dipping Holister normal fault (Dibblee and Ehrenspeck, 1991) but is not likely to be impacted by the Project.

As both the young fan and valley alluvium are unlikely to host scientifically-significant fossils at the surface due to their young (Holocene) age, no additional literature searches were conducted.

5.3 Sensitivity Determination

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

Qya: Young alluvial valley deposits are found across the entire Project area to an unknown depth. The alluvium is related to the ancient Los Angeles River and the confluence with the Verdugo Wash. The deposits are slightly consolidated to unconsolidated clays, silts, sands, and gravels. Alluvium in the valley bottoms is likely less than 5,000 years old and, thus, is considered too young to contain fossils. Therefore, this unit is assigned a **Low Potential** to contain paleontological resources. While Pleistocene fossils have been recovered near the Project, they are found at a depth below planned excavation for the Project.

Qyf: Young alluvial fan deposits are found in the western Project area, overlying the Qya. This fan is related to active erosion in Griffith Park. This fan is likely less than 5,000 years old and is considered too young to contain fossils. Therefore, this unit is assigned a **Low Potential** to contain paleontological resources.

6.0 Summary of Results and Recommended Mitigation

The Proposed project will involve shallow excavations in units mapped at young alluvium that is too young to host scientifically-significant fossils. Furthermore, borings for the geotechnical study showed most of the area is underlain by approximately 10 feet of artificial fill. Artificial fill are deposits of previously soil resulting from human construction and can include engineered fill for buildings, roads, dams, airport runways, etc. While the LACM shows several Pleistocene fossils from near the Project area, excavations associated with the Project are unlikely to reach the depths where fossils might be encountered. Therefore, the units have been given a designation of "Low Potential" according to both the CalTrans guidelines and professional guidance of the SVP.

Based on the evidence available from the archival research, ESA does not recommend development of a CalTrans Paleontological Mitigation Plan (i.e., paleontological monitoring during ground-disturbing activities). The Proposed Project will not have a significant impact on paleontological resources and no further work is necessary.

7.0 References

CalTrans, 2014. California Department of Transportation Standard Environmental Reference, Section 8: Paleontology. https://dot.ca.gov/programs/environmental-analysis/standard-environmental-reference-ser/volume-1-guidance-for-compliance/ch-8-paleontology#laws, accessed online, August 16, 2024.

Bedrossian, T.L., Roffers, Peter, Hayhurst, C.A., Lancaster, J.T., and Short, W.R., 2012, Geologic compilation of Quaternary surficial deposits in southern California (2012 Revision): California Geological Survey, 217, scale 1:100,000.

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Project Area

Geology

Lake Holocene (Surficial Deposits)

Qf: Alluvial Fan Deposits - unconsolidated clay, silt, sand, and gravel recently deposited parallel to localized stream valleys and/ or spread more regionally onto alluvial flats of larger river valleys; sandy sediment genrally more dominant than gravelly sediment

af: Artificial Fill - deposits of fill resulting from human construction, mining, or quarrying activities; includes engineered fill for buildings, roads, dams, airport runways, harbor facilities, and waste landfills

Holocene to Late Pleistocene (Superficial Deposits)

Qya: Young Alluvial Valley Deposits - unconsolidated to slightly consolidated, undissected to slightly dissected clay, silt, sand, and gravel along stream valleys and alluvial flats of larger rivers

Qyf: Young Alluvial Fan Deposits - unconsolidated to slightly consolidated, undissected to slightly dissected boulder, cobble, gravel, sand, and silt deposits issued from a confined valley or canyon

Late to Middle Pleistocene (Suficial Deposits

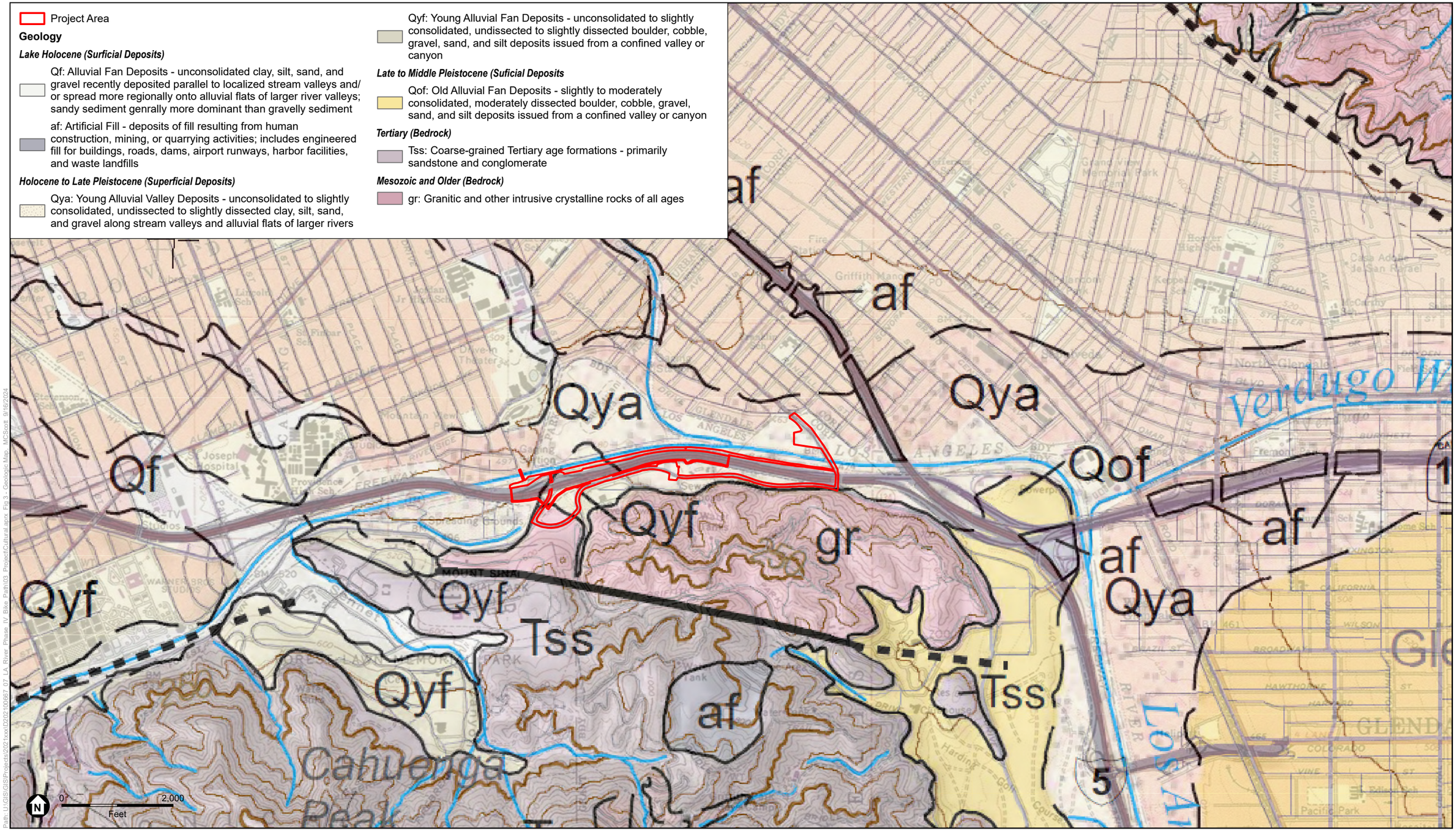
Qof: Old Alluvial Fan Deposits - slightly to moderately consolidated, moderately dissected boulder, cobble, gravel, sand, and silt deposits issued from a confined valley or canyon

Tertiary (Bedrock)

Tss: Coarse-grained Tertiary age formations - primarily sandstone and conglomerate

Mesozoic and Older (Bedrock)

gr: Granitic and other intrusive crystalline rocks of all ages



Path: U:\GIS\GIS\Projects\2021xxx\D2021006\07_LA_River_Phase_IV_Bike_Path\03_Project\Cultural.aprx Fig 3 - Geologic Map, MCScott 9/16/2024

SOURCE: California Geological Survey, 2012; ESA, 2024

City of Los Angeles River Phase IV Bike Path

Figure 3
Geologic Map

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Appendix A
Personnel Qualifications

Sara Dietler

Senior Archaeologist

EDUCATION

BA. Anthropology, San Diego State University

20 YEARS OF EXPERIENCE

CERTIFICATIONS/ REGISTRATION

California BLM Permit, Principal Investigator, Statewide

Nevada BLM Permit, Paleontology, Field Agent, Statewide

PROFESSIONAL AFFILIATIONS

Society for American Archaeology (SAA)

Society for California Archaeology (SCA)

Sara is a senior archaeology and paleontology lead with 20 years of experience in cultural resources management in Southern California. As a senior project manager, she manages technical studies including archaeological and paleontological assessments and surveys, as well as monitoring and fossil salvage for many clients, including public agencies and private developers. She is a cross-trained paleontological monitor and supervisor, familiar with regulations and guidelines implementing the National Historic Preservation Act (NHPA), National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), and the Society of Vertebrate Paleontology guidelines. She has extensive experience providing oversight for long-term monitoring projects throughout the Los Angeles Basin for archaeological, Native American, and paleontological monitoring compliance projects and provides streamlined management for these disciplines.

Relevant Experience

San Pedro Plaza Park, San Pedro, Los Angeles, CA. *Senior Cultural Resources Project Manager.* Provided archaeological and paleontological monitoring support for the San Pedro Plaza Park Project. The project area is located in the City of Los Angeles port district of San Pedro, approximately 26 miles south of downtown Los Angeles for the City of Los Angeles, Bureau of Engineering, Environmental Management Group, Sara provided quality control oversight for the archaeological and paleontological mitigation. During monitoring on the project, archaeological materials were recovered include refuse associated with park use since it opened in 1889, and historic building debris likely associated with the Carnegie Library which formerly stood on site. Provided recommendations for commemoration and protection of the find.

City of Los Angeles Department of Public Works BOE, Gaffey Street Pool Construction Monitoring, San Pedro, Los Angeles, CA. *Project Manager.* Sara oversaw the data recovery of a World War I slit trench discovered during project excavation for an ADA compliant sidewalk. Provided mitigation recommendations and immediate response to the find. Served as project manager and senior archaeologist on the project.

Warner Grand Theatre, Historic Resources Technical Report and Conditions Assessment, San Pedro, Los Angeles, CA. *Project Manager, Report Co-Author*. The City of Los Angeles Bureau of Engineering, Environmental Management Group requested a Cultural Resources Surveys to inform and guide future rehabilitation or redevelopment efforts of the Warner Grand Theatre. The Warner Grand Theatre designed in the Art Deco-Modern style by master architect B. Marcus Priteca in 1931, and is listed on the National Register of Historic Places, and is designated a Los Angeles Historic-Cultural Monument. ESA prepared a historical resources technical report and conditions assessment report, which provided a comprehensive table of character-defining features along with a conditions

assessment of each feature located within the interior and exterior of the Warner Grand Theatre.

City of Los Angeles Department of Public Works BOE, Alameda Street Widening Between Harry Bridges Boulevard and Anaheim Street Project, Los Angeles, CA. *Project Manager.* The project included upgrades to Alameda Street and adjoining streets with improved infrastructure to accept increased traffic from existing and proposed projects located primarily within the Port of Los Angeles and the Wilmington Industrial Park and to adequately deal with storm flows. Conducted a CHRIS record search of the project area for archaeological and paleontological resources and produced technical documents regarding the findings and recommendations for construction activities during the proposed project. In addition, provided archaeological/paleontological monitoring for geotechnical testing and further recommendations based on the results of the testing. Sara provided senior oversight of the reporting and survey and served as project manager.

670 Mesquit Street and Seventh Street Bridge Evaluation, Los Angeles, CA. *Project Manager and Report Co-author*. ESA prepared an EIR for the 670 Mesquit Street project in Los Angeles. As part of the EIR, a Cultural Resources Technical Report was prepared to determine if the project site was eligible for listing as a historical resource. The project site, originally occupied by the Los Angeles Ice and Cold Storage Company, was determined to lack integrity and therefore, ineligible for listing. Although the core of the building on the project site retained elements of the historic cold storage building, the facility was seismically upgraded resulting in significant alterations to its exterior. In its current condition, the facility does not convey its historical associations. The project was also evaluated to determine if it would result in any potential impacts to nearby historic resources, including the Seventh Street Bridge and adjacent railroad tracts. Located south of the project site is the Seventh Street Bridge, which is listed on the California Register of Historical Resources, and eligible for the National Register of Historic Places. Sara provided oversight and analysis for the preparation of Cultural Resources Technical Report.

Long Beach Courthouse Project; Long Beach, CA. *Senior Project Archaeologist and Project Manager.* Under contract to Clark Construction Sara directed the paleontological and archaeological monitoring for the construction of the New Long Beach Courthouse. She supervised monitors inspecting excavations up to 25 feet in depth. Nine archaeological features were recovered. Sara completed an assessment of the artifacts and fossil localities in a technical report at the completion of the project.

Venice Dual Force Main Project, Venice, CA. *Cultural Resources Lead.* The Venice Dual Force Main Project is an $88 million sewer force main construction project spanning 2 miles within Venice, Marina del Rey, and Playa del Rey. Contracted to Vadnais Trenchless Services and reporting to the City of Los Angeles, Bureau of Engineering, Environmental Management Group, ESA is serving as the project's environmental resource manager. Sara provides quality control oversight for the archaeological and paleontological mitigation.

Advanced Water Treatment Facility Project Groundwater Reliability Improvement Project, Pico Rivera, CA. *Project Manager.* ESA is providing environmental compliance monitoring for the Water Replenishment District to

ensure compliance with the conditions contained in the Mitigation and Monitoring Reporting Programs associated with three environmental documents, including the Final EIR, a Mitigated Negative Declaration, and a Supplemental EIR, pertaining to three infrastructure components associated with the project. ESA provides general compliance monitoring at varying rates of frequency depending on the nature of the activities and is sometimes on-site for 4-hour spot checks and other times for full 24-hour rotations. The project is located near a residential neighborhood and adjacent the San Gabriel River. Issues of concern include noise, vibration, night lighting, biological resources, cultural resources, and air quality. Sara provides quality assurance and oversight of the field monitoring, and day-to-day response to issues. She oversees archaeological and Native American monitoring for ground disturbance and coordinates all sub-consultants for the project. She provides daily, weekly, and quarterly reporting on project compliance to support permitting and agency oversight.

Southern California Edison On-Call Master Services Agreement for Natural and Cultural Resources Services; *Cultural Resources Task Manager*. Sara provides project management and senior archaeological support for an on-call Master Services Agreement with Southern California Edison for cultural and natural resources consulting services. This contract has included numerous surveys and monitoring projects for pole replacements and small- to mid-size reconductoring projects, substation maintenance, and construction projects. Sara has served as project manager for more than 25 projects under this contract. She is the go-to person for all water, gas, and power projects occurring in the city of Avalon on Santa Catalina Island. Sara is responsible for oversight of archaeological and paleontological monitors, serving as report author and report manager.

Los Angeles Unified School District (LAUSD) Central Los Angeles High School #9; Los Angeles, CA. *Senior Project Archaeologist & Project Manager*. Sara conducted on-site monitoring and investigation of archaeological sites exposed as a result of construction activities. During the data recovery phase in connection with a 19th century cemetery located on-site, she participated in locating of features, feature excavation, mapping, and client coordination. She organized background research on the cemetery, including genealogical, local libraries, city and county archives, other local cemetery records, internet, and local fraternal organizations. Sara advised on the lab methodology and setup and served as project manager. Sara was a contributing author and editor for the published monograph, which was published as part of a technical series, "Not Dead but Gone Before: The Archaeology of Los Angeles City Cemetery."

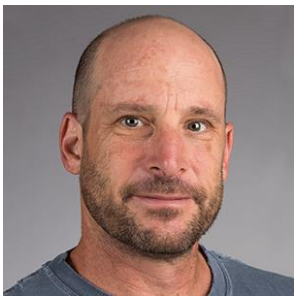
Scattergood Olympic Transmission Line, Los Angeles, CA. *Report Author*. The Los Angeles Department of Water and Power is proposing to construct and operate approximately 11.4 miles of new 230 kilovolt (kv) underground transmission line that would connect the Scattergood Generation Station and Olympic Receiving Station. The project includes monitoring of construction activities occurring in street rights-of-way. Sara is providing final reporting for the long-term monitoring and QA/QC of the field data.

Veterans Administration Long Beach, Long Beach, CA. *Senior Project Manager.* Sara managed a long term monitoring project which also includes implementation of a Memorandum of Agreement, a Plan of Action, and Historic Properties Treatment plan for the mitigation of disturbance to a prehistoric site on the campus.

Downtown Cesar Chavez Median Project, City of Los Angeles, CA. *Project Manager*. Sara assisted the City of Los Angeles Department of Public Works Bureau of Engineering with a Local Assistance Project requiring consultations with Caltrans cultural resources. Sara was responsible for Caltrans coordination, serving as contributing author and report manager for the required Archaeological Survey Report, Historic Properties Survey Report, and Historical Resources Evaluation Report prepared for the project.

Hellman Ranch Project, Orange County, CA. *Lab Director.* Sara served as the lab director for the final monitoring phase of the John Laing Homes development project, cataloging and analyzing artifacts recovered from salvage monitoring and test units placed in relation to recovered intact burials. She conducted microscopic analysis of small items such as bone tools and shell and stone beads, directed lab assistants, and oversaw special studies, including the photo-documentation of the entire collection. Sara completed a section reporting on the results of the bead and ornament analysis in the final report, which was published as part of a technical series.

Hansen Dam Golf Course Water Recycling Project, Los Angeles, CA. *Senior Archaeologist* and *Project Manager.* Sara directed a phase I historical assessment for the Hansen Dam Golf Course Water Recycling Project located in the San Fernando Valley, City of Los Angeles, California. The project included the construction of an outdoor pumping station adjacent to the existing Hansen Tank located at the Los Angeles Department of Water and Power's (LADWP's) Valley Generating Station. In addition, a pipeline or distribution line was planned to be installed from the pumping station to the Hansen Dam Golf Course along the Tujunga Wash. The phase I study of this project included mitigation for the effects of the project on the portion of the golf course falling within the area of potential effects, which was potentially sensitive for buried cultural resources as the result of a complex of World War II housing units placed on the site between the 1940s and the 1960s. Sara conducted consultation with the USACE regarding the project.



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.

Shapiro, R. S. and Spangler, E., 2009, Bacterial fossil record in whale falls: relation of taphonomy and paleoecology to depositional environment: Palaeogeography, Palaeoclimatology, Palaeoecology, v. 274, p. 196-203.

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

Paleontological Records Search Results (Confidential)