APPENDIX D.2

PALEONTOLOGICAL ASSESSMENT

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1100 E. 5TH STREET PROJECT, CITY OF LOS ANGELES, CALIFORNIA

Paleontological Resources Assessment Report

April 2020

ESA

For Public Distribution

1100 E. 5TH STREET PROJECT, CITY OF LOS ANGELES, CALIFORNIA

Paleontological Resources Assessment Report

Prepared for:
Amazon Properties, LLC
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April 2020

Prepared by:
ESA

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Project Location:
Los Angeles (CA) USGS 7.5 minute Topographic Quad; Township 1 South, Range 13 West, unsectioned

Acreage: Approx. 1.2 acres

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EXECUTIVE SUMMARY

1100 E. 5th Street Project - Paleontological Resources Assessment Report

Environmental Science Associates (ESA) has conducted a Phase I Paleontological Resources Assessment for the 1100 E. 5th Street Project (Project) as requested by the City of Los Angeles. The Applicant proposes to construct one new mixed-use building in the Central City North Community Plan Area in the City of Los Angeles (City). The Project site is currently occupied by three structures and a surface parking lot. The Project would include demolition of the existing buildings and parking lot, and would construct one mixed-use building in its place. The City is the lead agency pursuant to the California Environmental Quality Act (CEQA).

The 1.2-acre Project site is located within the Los Angeles Arts District at 1100 E. 5th Street and 506-530 S. Seaton Street (Project Site). The Project Site is bounded by E. 5th Street to the north, Seaton Street to the west, paved surface lot to the south, and one- and four- story warehouse buildings and surface parking lot to the east. Specifically, the proposed Project Site is located in an unsectioned portion of Township 1 South, Range 13 West, of the Los Angeles 7.5-minute USGS topographic quadrangle.

The surficial geology of the Project Site consists of Quaternary Alluvium deposited within Holocene time (Dibblee and Ehrenspeck, 1989).[1] A paleontological records search was conducted for the Project by the Natural History Museum of Los Angeles County (LACM) on July 17, 2017. The results indicate no known fossil localities on the Project Site; however, older Quaternary Alluvium deposited during the Pleistocene epoch[2] can contain significant fossil vertebrate remains, and this alluvium is present in discontinuous areas throughout Downtown Los Angeles and east Los Angeles, including the subsurface of the Project Site. The three closest fossil localities in these sediments known to the LACM (LACM 1023, 1755, and 2032) have been found approximately 1.3 to 2-miles away from the Project Site and have produced fossil specimens of a variety of Ice Age animals such as mammoth and ground sloths at depths from 20 to 43-feet below surface. The surficial geology of the Project Site consists of Holocene-aged Quaternary Alluvium. A review of geologic mapping and the scientific literature indicates that the surficial Quaternary Alluvium is too young to preserve fossil resources in the surface or shallow soils of the Project Site; however, the age of the sediments increases with depth and deeper layers may preserve fossil resources. Therefore, the sediments underlying the Project Site are characterized as having variable paleontological sensitivity[3], ranging from low to high, depending

[1] Defined by the International Commission on Stratigraphy (ICS) as 11,700 years ago to the present (ICS, 2017).
[2] Defined by the ICS as 2,588,000 years ago to 11,700 years ago to the present (ICS, 2017).
[3] The known potential to produce significant fossils.

on the soil unit. ESA provides recommendations for paleontological impact mitigation in order to ensure that potential impacts remain less than significant. These recommendations are provided in the Conclusions and Recommendations section at the end of this report.

INTRODUCTION AND PROJECT DESCRIPTION

Introduction

Environmental Science Associates (ESA) has conducted a Phase I Paleontological Resources Assessment for the 1100 E. 5th Street Project (Project) as requested by the City of Los Angeles (City). The Applicant proposes to construct one new mixed-use building in the Central City North Community Plan Area in the City. The Project site is currently occupied by three structures and a surface parking lot. The Project would include demolition of the existing buildings and parking lot, and would construct one mixed-use building in its place. The City is the lead agency pursuant to the California Environmental Quality Act (CEQA).

ESA personnel involved in the preparation of this report are as follows: Monica Strauss, M.A., Project Director; Sara Dietler, B.A., Project Manager; Alyssa Bell, Ph.D., report author; and Jessie Lee, GIS specialist. Resumes of key personnel are included in **Appendix A**.

Project Location

The 1.2-acre Project site is located within the Los Angeles Arts District at 1100 E. 5th Street and 506-530 S. Seaton Street (**Figure 1**). The Project Site is bounded by E. 5th Street to the north, Seaton Street to the west, paved surface lot to the south, and one- and four- story warehouse buildings and surface parking lot to the east. Specifically, the proposed Project Site is located in an unsectioned portion of Township 1 South, Range 13 West, of the Los Angeles 7.5-minute USGS topographic quadrangle (**Figure 2**).

Project Description

The Project would involve the demolition of the existing three vacant, single-story, industrial warehouses that occupy approximately 35,445 square feet of floor area and surface parking lot, and the construction of an up to 249,758-square-foot mixed-use building including up to 220 live/work units, approximately 22,725 square feet of open space for residents, up to 46,548 square feet of commercial uses, and associated parking facilities. Eleven percent of the units (approximately 25 live/work units) would be deed-restricted for Very Low Income households. The proposed building would be up to 110’-0” feet to the top of the roof (8 above-ground levels), plus three levels of subterranean parking and a fourth quarter level of storage area, that would involve a depth of excavation of approximately 47 feet below ground surface. The project includes a flex option for additional commercial and retail space that would not result in a change to the square footage or any building parameters.

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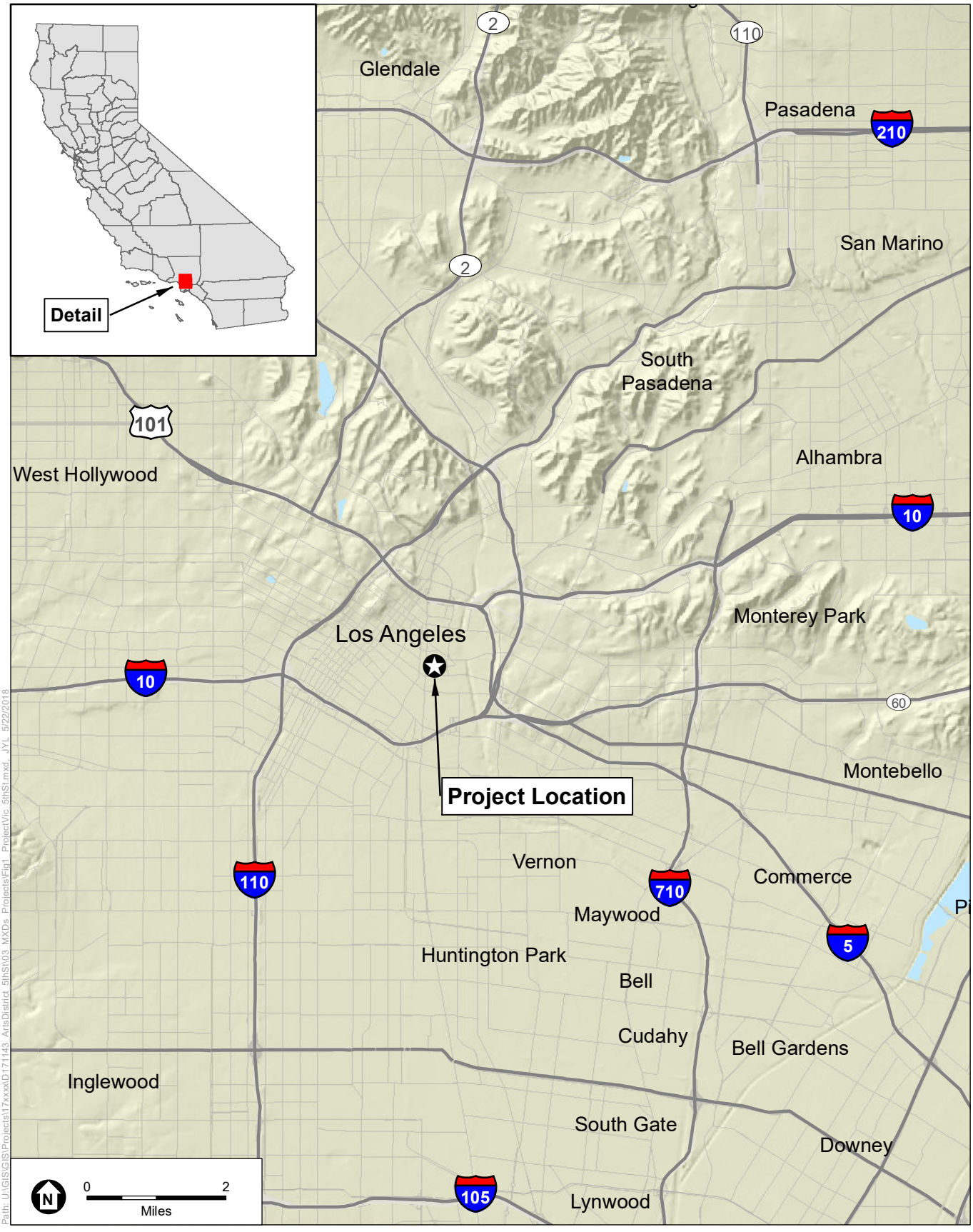

SOURCE: ESRI; County of Los Angeles

1100 E. 5th Street

Figure 1
Project Vicinity Map

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SOURCE: USGS 7.5' Topo Quad Los Angeles 1978; 1982

1100 E. 5th Street

Figure 2
Project Location Map

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REGULATORY FRAMEWORK
State and Local Regulations

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 local regulations, as well as professional standards provided by the Society of Vertebrate Paleontology (SVP).

State Regulations

California Environmental Quality Act

The 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?" (CEQA Guidelines Section 15023, Appendix G, Section XIV, Part a).

The loss of any identifiable fossil that could yield information important to prehistory, or that embodies the distinctive characteristics of a type of organism, environment, period of time, or geographic region, 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 (significant impact). At the project-specific level, direct impacts can be mitigated to a less than significant level through the implementation of paleontological mitigation.

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." 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. For project sites that are directly underlain by geologic units with no paleontological sensitivity, there is no potential for impacts on paleontological resources unless sensitive geologic units which underlie the non-sensitive unit are also affected.

California Public Resources Code Section 5097.5 and Section 30244

Other state requirements for paleontological resource management are included in California Public Resources Code (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.

Local Regulations

City of Los Angeles – General Plan

The Conservation Element of the City of Los Angeles General Plan recognizes paleontological resources in Section 3: "Archeological and Paleontological" (II-3), specifically the La Brea Tar Pits, and identifies protection of paleontological resources as an objective (II-5). The General Plan identifies site protection as important, stating, "Pursuant to CEQA, if a land development project is within a potentially significant paleontological area, the developer is required to contact a bona fide paleontologist to arrange for assessment of the potential impact and mitigation of potential disruption of or damage to the site. If significant paleontological resources are uncovered during project execution, authorities are to be notified and the designated paleontologist may order excavations stopped, within reasonable time limits, to enable assessment, removal or protection of the resources" (City of Los Angeles, 2001).

City of Los Angeles CEQA Thresholds of Significance

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

- Whether, or the degree to which, the project might result in the permanent loss of, or loss of access to, a paleontological resource; and
- Whether the paleontological resource is of regional or statewide significance. [City of Los Angeles, 2006]

Society for Vertebrate Paleontology

The SVP has established standard guidelines (SVP, 1995, 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 (1995:26), significant nonrenewable paleontological resources are:

> Fossils and fossiliferous deposits here restricted to vertebrate fossils and their taphonomic and associated environmental indicators. This definition excludes invertebrate or paleobotanical fossils except when present within a given vertebrate assemblage. Certain invertebrate and plant fossils may be defined as significant by a project paleontologist, local paleontologist, specialists, or special interest groups, or by lead agencies or local governments.

As defined by the SVP (1995:26), significant fossiliferous deposits are:

> A rock unit or formation which contains significant nonrenewable paleontologic resources, here defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces, and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information (ichnites and trace fossils generated by vertebrate animals, e.g., trackways, or nests and middens which provide datable material and climatic information). Paleontologic resources are considered to be older than recorded history and/or older than 5,000 years BP [before present].

Based on the significance definitions of the SVP (1995), 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 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, 1995).

Fossils are contained within surficial sediments or bedrock, and are therefore not observable or detectable unless exposed by erosion or human activity. In summary, paleontologists cannot know either the quality or quantity of fossils prior to natural erosion or human-caused exposure. 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 these remains are significant, successful mitigation and salvage efforts may be undertaken in order to prevent adverse impacts to these resources.

Paleontological Sensitivity

Paleontological sensitivity is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. In its "Standard Guidelines for the Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources," the SVP (2010:1-2) 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. Rocks units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcaniclastic formations (e. g., ashes or tephras), 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, protection or salvage efforts 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 paleontologic potential of the rock units present within the study area.

Paleontological Resources Significance Criteria

Fossils are considered to be 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; or

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.

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, uncommon, or diagnostically important. 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).

METHODS AND RESULTS

Archival Research

The Project Site was the subject of thorough background research and analysis. The research included a paleontological records search from the Natural History Museum of Los Angeles County (LACM), as well as geologic map and literature reviews. The Project Site has also been the subject of a geotechnical study (Geotechnologies, Inc., 2017).

Geologic Setting

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

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

Geologic Map & Literature Review

Geologic mapping by Dibblee and Ehrenspeck (1989) indicates that[4] Quaternary Alluvium deposited during Holocene time covers the surface of the Project Site (mapped as Qa in **Figure 3. Geology**). The alluvial sediments were deposited on the ancient floodplain of the Los Angeles River and consist of well-sorted silts and sands, interbedded with stream channel deposits of sands and gravels (Dibblee and Ehrenspeck, 1989).

Geotechnical analysis of the Project Site indicates that artificial fill is anticipated to be shallow, with depths of 3 feet below ground surface (bgs) recorded in borings at the site (Geotechnologies, Inc., 2017). Below the artificial fill is the Holocene-aged younger Quaternary Alluvium, as

[4] Defined by the International Commission on Stratigraphy (ICS) as 11,700 years to the present (ICS, 2017).

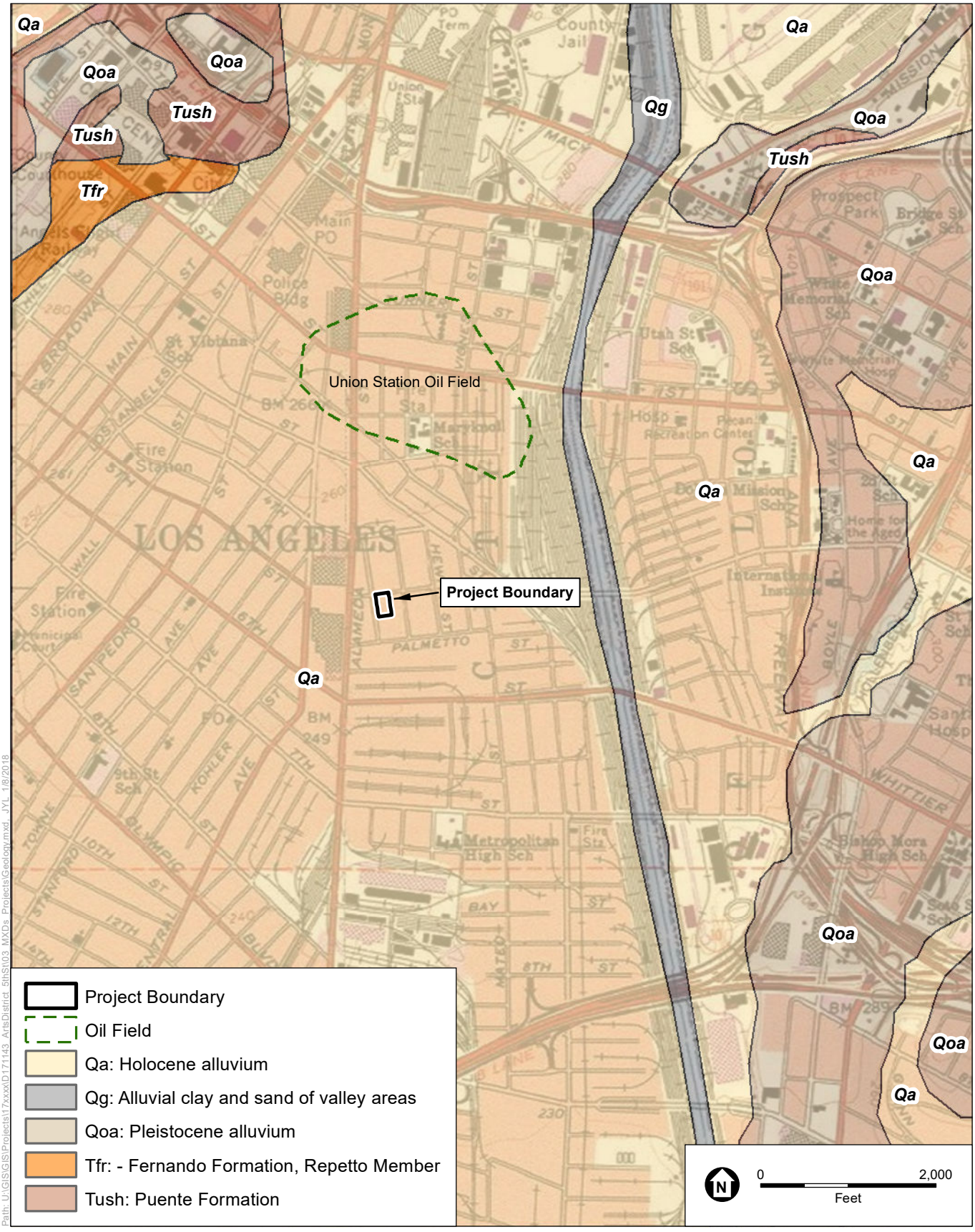
mapped by Dibblee and Ehrenspeck (1989). At greater depths, Pleistocene-aged older Quaternary Alluvium (mapped as Qoa in **Figure 3**) and the Pliocene-aged Fernando Formation (mapped as Tfr **Figure 3**). The nearest outcrops of older alluvium to the Project Site are just east of the US-101 (Hollywood) Freeway, roughly 0.9-miles away (Dibblee and Ehrenspeck, 1989). The Fernando Formation is a marine and nonmarine semi-friable, massively bedded sandstone that crops out near the intersection of Broadway Avenue and 1st Street, roughly one mile from the Project Site (Dibblee and Ehrenspeck, 1989). The Fernando Formation occurs between 100-150 feet bgs in the Project Site (Yerkes et al., 1977).

The Holocene-aged Quaternary Alluvium is relatively recent in age in the upper layers and, as such, is not old enough to contain fossil remains, which the SVP defines as over 5,000 years old (SVP, 2010). However, these sediments increase in age with depth, such that while the surficial sediments are too young to preserve fossils, the underlying older Quaternary Alluvium dates to the late Holocene or Pleistocene and therefore may preserve fossil resources. These sediments have a rich fossil history in Los Angeles (Brattstrom and Sturn, 1959; Steadman, 1980) and throughout southern California (Jefferson 1991a and b, Miller 1971, Scott and Cox 2008). The most common fossils include the bones of mammoth, bison, horse, lion, cheetah, wolf, camel, antelope, peccary, mastodon, capybara, and giant ground sloth, as well as small animals such as rodents and lizards (Graham and Lundelius, 1994). In addition to illuminating the striking differences between Southern California in the Pleistocene and today, this abundant fossil record has been vital in studies of extinction (e.g. Sandom, et al., 2014; Scott, 2010), ecology (e.g. Connin et al., 1998), and climate change (e.g. Roy et al., 1996).

Natural History Museum of Los Angeles County Records Search

On July 3, 2017, Ecoterra 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 in the Project Site. The records search returned no known localities within the Project Site, however a number of vertebrate fossils are known from similar sedimentary deposits in downtown Los Angeles (McLeod, 2017). These are summarized here.

Late Holocene and Pleistocene-aged older alluvium (Qoa) underlies the surficial younger alluvium in the Project Site and vicinity. These sediments have yielded fossils of numerous Ice Age animals in the Los Angeles area. The closest locality known to the LACM is approximately 1.3-miles away from the Project Site, where a fossil horse (*Equus*) was recovered from 43 feet bgs (McLeod, 2017). Approximately 1.87 miles away from the Project Site, fossil specimens of pond turtle, (*Clemmys mamorata*), ground sloth (*Paramylodon harlani*), mastodon (*Mammut americanum*), mammoth (*Mammuthus imperator*), horse (*Equus*), and camel (*Camelops*) were recovered from a depth of 20-35 feet below the surface (McLeod, 2017). Just north of this locality, two miles away from the Project Site excavations for a storm drain recovered fossil



SOURCE: Dibblee Geological Foundation

1100 E. 5th Street

Figure 3
Geological Map

ESA

specimens of turkey (*Meleagris californicus*), sabre-toothed cat (*Smilodon fatalis*), horse (*Equus*), and deer (*Odocoileus*) at an unstated depth (McLeod, 2017).

The results of the database search are included as **Appendix B**.

Paleontological Sensitivity Analysis

The review of the scientific literature and geologic mapping, as well as the records search from the LACM, was used to assign paleontological sensitivities following the guidelines of the SVP (1995, 2010) to the geologic units that are present at the surface or in the subsurface of the Project Site and will be impacted by ground-disturbing activities associated with the Project:

- **Quaternary younger Alluvium (Qa) –** Surficial sediments; **low-to-high sensitivity**, increasing with depth. While the shallow layers of this unit are too young to preserve fossil resources (i.e., <5,000 years old), these sediments increase in age with depth and may preserve fossils in deeper layers. These potential fossils include a wide variety of Ice Age animals, as reviewed above.

- **Quaternary older Alluvium (Qoa) –** Subsurface, **high sensitivity.** A wide variety of Ice Age fossils are known from these sediments across the Los Angeles Basin, as reviewed above, including multiple specimens belonging to ten taxa known from within 2.5-miles of the Project Site (McLeod, 2017).

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 U.S. Highways 110 and 101 in Downtown Los Angeles (Yerkes et al., 1977). This study found that the depth to older alluvial sediments was highly variable, ranging from 10 to 200 feet bgs (Yerkes et al., 1977). The LACM records search indicated fossils have been recovered at depths of as little as 20 feet in the area (McLeod, 2017). Given the lack of definitive information on the depth of the transition to high sensitivity sediments at the Project Site, an estimated depth of 15 feet bgs is determined using the depths from Yerkes et al. (1977) and the LACM fossil localities (McLeod, 2017).

It should be noted that while the Fernando Formation is present in the subsurface of the Project Site, it occurs between 100-150 feet bgs in the area (Yerkes et al., 1977), and therefore will not be impacted by construction activities associated with the Project, which are expected to only extend 37 feet bgs.

CONCLUSIONS AND RECOMMENDATIONS

This study concluded that the surficial sediments underlying the Project Site, identified as younger Quaternary Alluvium, have low paleontological sensitivity as they are too young to preserve fossils, and occur to an undetermined depth in the Project Site. However, the Late Holocene-Pleistocene Older Alluvium, present at an undetermined depth in the subsurface of the Project Site, has high paleontological sensitivity. Based upon the depth to the older Alluvium to the north and northwest of the Project Site (as little as 10 feet bgs; Yerkes et al., 1977) and the depth at which fossils have been found within 1.3 to 2-miles of the Project Site (as little as 20 feet bgs; McLeod, 2017), it is estimated that the transition from low to high sensitivity sediments could occur at around 15 feet bgs in the vicinity of the Project Site and on the Project Site itself. The Project proposes deep excavation and excavation shoring during the construction of subterranean parking structures, building foundations, and infrastructure and utility improvements (e.g., sewer, electrical, water, and drainage systems) at depths that could impact older Alluvium with a high sensitivity for fossils.

The following recommendations are made and would serve to reduce impacts to unique paleontological resources or unique geological feature to a less than significant level:

1. A qualified paleontologist meeting the Society of Vertebrate Paleontology (SVP) Standards (SVP, 2010) (Qualified Paleontologist) shall be retained prior to the approval of demolition or grading permits. 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 and Project progress meetings on a regular basis, and shall report to the Project Site in the event potential paleontological resources are encountered.

2. The Qualified Paleontologist shall conduct construction worker paleontological resources sensitivity training prior to the start of ground disturbing activities (including vegetation removal, pavement removal, etc.). In the event construction crews are phased, additional trainings shall be conducted for new construction personnel. The training session shall focus on the recognition of the types of paleontological resources that could be encountered within the Project Site and the procedures to be followed if they are found. Documentation shall be retained by the Qualified Paleontologist demonstrating that the appropriate construction personnel attended the training.

3. Paleontological resources monitoring shall be performed by a qualified paleontological monitor (meeting the standards of the SVP, 2010) under the direction of the Qualified Paleontologist. Paleontological resources monitoring shall be conducted for all ground disturbing activities in previously undisturbed sediments

that exceed 15 feet in depth in previously undisturbed older Alluvial sediments which have high sensitivity for encountering paleontological resources. However, depending on the conditions encountered, full-time monitoring within these sediments can be reduced to part-time inspections or ceased entirely if determined adequate by the Qualified Paleontologist. The surficial Alluvium has low paleontological sensitivity and so work in the upper 15 feet of the Project Site does not require monitoring. The Qualified Paleontologist shall spot check the excavation on an intermittent basis and recommend whether the depth of required monitoring should be revised based on his/her observations. Monitors shall have the authority to temporarily halt or divert work away from exposed fossils or potential fossils. Monitors shall prepare daily logs detailing the types of activities and soils observed, and any discoveries.

4. Any significant fossils collected during project-related excavations shall be prepared to the point of identification and curated into an accredited repository with retrievable storage. The Qualified Paleontologist shall prepare a final monitoring and mitigation report for submittal to the City in order to document the results of the monitoring effort and any discoveries. If there are significant discoveries, fossil locality information and final disposition will be included with the final report which will be submitted to the appropriate repository and the City.

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APPENDIX A
Personnel Qualifications

EDUCATION

Ph.D., Vertebrate Paleontology; University of Southern California

M.S., Environmental Microbiology; University of Tennessee

B.A. with honors, Ecology and Systematics; William Jewell College & Homerton College, Cambridge University

10 YEARS EXPERIENCE

Alyssa Bell, PhD

Paleontologist

Dr. Alyssa Bell has supervised and peformed field work, authored project reports, and provided scientific and compliance direction and quality control for paleontological projects throughout Southern California. Dr. Bell has accumulated a wealth of field experience, working with crews from a variety of institutions on field sites in California, Arizona, New Mexico, South Dakota, and Utah, and has led her own expeditions in Montana. She has performed all manner of investigations from surveys and assessments to monitoring and fossil idenfitication over the last 15 years as a part of her academic pursuits and professional consultation, with the last three years being exclusively professional endeavors.

In addition to consulting, Dr. Bell serves as a postdoctoral fellow at the Dinosaur Institute of the Natural History Museum of Los Angeles County (LACM). There she is involved in pursuing her own research into fossil birds as well as working with the Institute's field projects and museum-wide education and outreach initiatives. She has also published peer-reviewed articles and book chapters and given numerous presentations at scientific conferences on both her paleontological and microbiological research.

Relevant Experience

ICHA Area 10 (PA 10-2 & 10-4) Archaeological and Paleontological Monitoring, Irvine, CA. *Principal Investigator & Project Paleontologist.* Dr. Bell managed the curatorial process for fossils collected during monitoring of pre-construction activities at the University of California, Irvine, and authored the final report.

Suncrest Reactive Power Support Project, San Diego County, CA. *Principal Investigator.* Dr. Bell authored the paleontological assessment for the Proponent's Environmental Assessment (PEA) in support for a dynamic reactive power support facility and associated 230-kilovolt (kV) transmission line near Alpine, California. The application for Certificate of Public Convenience and Necessary was filed in summer 2015 and the PEA was deemed complete in December 2015.

Washington National Archaeological and Paleontological Monitoring (Access Culver City), Culver City, CA. *Principal Investigator & Project Paleontologist.* Dr. Bell managed the curatorial process for fossils collected during monitoring of pre-construction activities at the Washington national site in Culver City, CA and authored the final report.

OTO Hotels Santa Monica Archaeological and Paleontological Service, Santa Monica, CA. *Principal Investigator.* Dr. Bell supervised paleontological monitoring and mitigation services during construction excavations and grading. Services included implementation of a paleontological mitigation monitoring program and reporting.

Sacred Heart Specific Plan Environmental Impact Report (EIR), La Canada Flintridge, CA. *Principal Investigator.* Dr. Bell prepared paleontological studies and

developed monitoring & mitigation recommendations for the Sacred Heart development project.

Sixth & Bixel Paleontological Monitoring Services Project, Los Angeles, CA. *Principal Investigator & Project Paleontologist.* Dr. Bell supervised paleontological monitoring of preconstruction activities in support of a development project encompassing two parcels in downtown Los Angeles. During these activities, monitors identified and recovered numerous significant vertebrate fossils. Dr. Bell supervised the excavation of fossilized whale remains discovered on-site, and oversaw the collection and curation of all fossil specimens.

Natural and Cultural Support for the Gordon Mull Subdivision EIR, Glendora, CA. *Principal Investigator.* Dr. Bell collected the necessary data to prepare the technical sections and mitigation recommendations to support an EIR prepared by another firm to address the Gordon Mull Subdivision in the city of Glendora. The project is proposes to redevelop a 71-acre, 19-lot located in the San Gabriel Foothills.

Lake Elsinore Lakeshore Town Center Permitting, Riverside County, CA. *Principal Investigator.* Dr. Bell provided paleontological studies and developed monitoring and mitigation recommendations for the Lake Elsinore Town Center project in Riverside County.

San Pedro Plaza Park - Phase III Archaeological Monitor, Los Angeles, CA. *Principal Investigator.* Dr. Bell identified fossils during the mitigation measurement-required archaeological monitoring of earthmoving activities in San Pedro Park Plaza. She is also responsible for curation of the fossil material and authorship of the paleontological section of the final report.

City of Hope Specific Plan and EIR, Duarte, CA. *Principal Investigator.* Dr. Bell provided paleontological resource studies for the City of Hope Specific Plan Project.

Blythe Solar Power Project, Units 1 & 2, Riverside County, CA. *Project Paleontologist.* Dr. Bell supervised paleontological monitoring of preconstruction activities for a solar photo-voltaic cell power-generating facility outside the city of Blythe. As a part of her role, she provided oversight and management of paleontological monitors and development of the final monitoring report.

Industrial Project Environmental Impact Report, Colton, CA. *Principal Investigator.* Dr. Bell provided a paleontological resources study for a six-acre industrial project site at the southwest corner of Agua Mansa Road and Rancho Avenue in the city of Colton.

Mojave Solar Project Paleontological Reporting, San Bernardino County, CA. *Principal Investigator.* Dr. Bell managed curation of fossil materials and authored the final report of paleontological monitoring services provided for construction activities in support of a solar field development project in San Bernardino County.

El Camino Real Bridge Replacement Environmental Services, Atascadero, CA. *Principal Investigator.* Dr. Bell provided environmental services, including preparation of all California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) documentation, technical studies, and permitting, for the replacement of the El Camino Real Bridge over Santa Margarita Creek in Atascadero.

Sara Dietler

Archaeologist

EDUCATION

B.A., Anthropology, San Diego State University

19 YEARS 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

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.”

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. Responsible for Caltrans coordination, serving as contributing author and report manager for required ASR, HPSR, and HRER prepared for the project.

Elysian/USC Water Recycling Project Initial Study/Environmental Assessment, Los Angeles, CA. *Project Manager.* Sara worked on the Initial Study/Mitigated Negative Declaration and an Environmental Assessment/Finding of No Significant Impact to construct recycled water pipelines for irrigation and other industrial uses serving Los Angeles Department of Water and Power customers in downtown Los Angeles, including Elysian Park. The U.S. Environmental Protection Agency is the federal lead agency.

APPENDIX B
Confidential