

April 26, 2019

Mr. Richard Galvin
Vice-President/CFO
GPA Consulting
231 California Street
El Segundo, CA 90245
Transmitted via email to richard@gpaconsulting-us.com

RE: ***Paleontological Resource Assessment for the Sixth Street Park, Arts, River & Connectivity Improvements Project, City of Los Angeles, Los Angeles County, California***

Dear Mr. Galvin,

At the request of GPA Consulting, Applied EarthWorks, Inc. (Æ) performed a paleontological resource assessment for the Sixth Street Park, Arts, River & Connectivity (PARC) Improvements Project (Project), City of Los Angeles, Los Angeles County, California. The scope of work included a museum records search, a literature and geologic map review, and preparation of this technical memorandum (memo). This memo, which serves as a summary of our findings, was written in accordance with the guidelines set forth by the Society of Vertebrate Paleontology (SVP) (2010) and will satisfy the requirements of the California Environmental Quality Act (CEQA).

Project Description and Background

The Sixth Street PARC Improvements Project includes the creation of public recreational space on approximately 13 acres in areas underneath and adjacent to the upcoming Sixth Street Viaduct in the City of Los Angeles. The City has completed the design to replace the Viaduct over the Los Angeles River (River) and U.S. 101. The old Viaduct has been demolished and construction of the new Viaduct began in 2016; it is anticipated to be completed in 2021. The proposed Project is divided into three sections—West Park, East Park and the Arts Plaza and River Gateway. Improvements associated with the Project will be conducted in two construction phases. Construction of Phase 1, which consists of constructing the General Park Elements, East Park, West Park, Arts Plaza and River Gateway, may be phased from East to West as space becomes available below the Viaduct. Phase II could consist of installing reinforced concrete planted terraces along the banks of the Los Angeles River.

Regulatory Context

Paleontological resources cannot be replaced once they are destroyed. Therefore, paleontological resources are considered nonrenewable scientific resources and are protected under the CEQA. Specifically, in Section V(c) of Appendix G of the CEQA Guidelines, the “Environmental Checklist Form,” the question is posed: “Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?”



To determine the uniqueness of a given paleontological resource, it must first be identified or recovered (i.e., salvaged). Therefore, mitigation of adverse impacts to paleontological resources is mandated by CEQA. In addition, paleontological resources are addressed under the Conservation Element of the *City of Los Angeles General Plan* (2001). Section 3 specifically addresses the treatment of paleontological resources which states the following objective and policy:

Objective: protect the city’s archeological and paleontological resources for historical, cultural, research and /or educational purposes.

Policy: continue to identify and protect significant archaeological and paleontological sites and/or resources known to exist or that are identified during land development, demolition or property modification activities [City of Los Angeles 2001: II-5-II-6].

Paleontological Resource Potential

Absent specific agency guidelines, most professional paleontologists in California adhere to the guidelines set forth by the SVP (2010) to determine the course of paleontological mitigation for a given project. These guidelines establish protocols for the assessment of the paleontological resource potential of underlying geologic units and outline measures to mitigate adverse impacts that could result from project development. Using baseline information gathered during a paleontological resource assessment, the paleontological resource potential of the geologic unit(s) (or members thereof) underlying a Project Area can be assigned to one of four categories defined by the SVP (2010). These categories include high, undetermined, low, and no paleontological resource potential.

Methodology

To determine the paleontological sensitivity of geologic units underlying the Project Area, published geologic maps were reviewed and the Los Angeles County Museum of Natural History conducted a records search of known fossil localities in the area on November 16, 2017. Published reports on the regional geology and paleontology of the area were also reviewed (Norris and Webb, 1976; Springer et al., 2009; Yerkes and Campbell, 2005; and Yerkes et al., 1971).

Resource Context

The Project Area is in the central block of the Los Angeles Basin and the northwesternmost extent of the Peninsular Ranges geomorphic province. The dominant structural feature of the central block is a doubly plunging synclinal trough. This feature, combined with overall subsidence of the Los Angeles Basin during the Cenozoic Era, has resulted in sedimentary deposits 13,000 feet thick in distal regions of the syncline to around 31,000 feet thick in the central portion (Yerkes et al., 1971). This sequence records deposition from the basin’s inception in the Middle Miocene through deposition in the Late Pleistocene. “The marked differences in rate and amount of subsidence caused pronounced lateral variations in lithology and thickness in most of the sedimentary rock unites; contemporaneous folding and faulting, accompanied by local erosion, resulted in numerous regional and local unconformities, disconformities, and stratigraphic discontinuities across faults” (Yerkes et al., 1971:A16). The Peninsular Ranges are a complex of blocks “uplifted, tilted seaward, and sliced longitudinally into subparallel blocks by young, steeply dipping northwest-trending fault zones” (Yerkes et al., 1971:A13) that extend 125 miles from the Transverse Ranges and Los Angeles Basin to the tip of Baja California. The Peninsular Ranges are



bounded to the east by the Colorado Desert and range in width from 30 to 100 miles (Norris and Webb, 1976).

According to Yerkes and Campbell (2005), surficial deposits in the Project Area are mapped as “Qf” Alluvial-fan (Holocene) unconsolidated sediments on active and recently active alluvial fans and in some connected headward channel segments (Yerkes and Campbell, 2005; Campbell et al., 2014:13). Derived from the Los Angeles River, these deposits are unlikely to preserve fossil material because of their recent nature.

Other deposits are also Quaternary in age (Yerkes and Campbell, 2005; Campbell et al., 2014):

- Artificial fill (Late Holocene), consisting of sand, silt, and gravel resulting from human activities (Qaf). Near, but west of the Project Area.
- Old alluvium, undivided (Late to Middle Pleistocene) unconsolidated to moderately indurated, deposited on floodplains, and locally including related alluvial fans and streambeds; surfaces can show moderate to well-developed pedogenic soils (Qoa). Near, but northeast of the Project Area.
- Old alluvial-fan deposits, undivided (Late to Middle Pleistocene) slightly to moderately consolidated deposits, surfaces dissected in varying degrees; surfaces can show moderately to well-developed pedogenic soils (Qof). Located within the very eastern portion of the Project Area.

The older Quaternary alluvial deposits were probably derived from the more elevated terrain outside of the Project Area. Pleistocene-age or older deposits have proven to yield scientifically significant paleontological resources throughout southern California from the coastal areas to the inland valleys (Springer et al., 2009).

In very close proximity, to the north of the Project Area, Yerkes and Campbell (2005) mapped surface exposures of two rock formations. Both the Puente and Fernando formations formed under marine conditions. Three members of the Puente Formation are mapped near the Project Area. Two are well-bedded, light gray, Early Pliocene siltstone (Tpnz) and siliceous shale (Tpns). The other is a Late Miocene sandstone member (Tpna) that is also well-bedded, and is very fine-to very coarse-grained, medium to light brown and light gray. The nearby mapped member of the Fernando Formation is a massive Pliocene siltstone (Tf₁); this formation locally contains Repettian-Wheelerian Early Pleistocene to Early Pliocene foraminiferal zone boundary (Campbell et al., 2014; Yerkes and Campbell, 2005).

Records Search Results

The Natural History Museum of Los Angeles County (NHMLAC) reports no previously recorded vertebrate fossil localities in the Project Area, but three fossil localities are recorded nearby in the older Quaternary sedimentary deposits that likely also underlie the younger Quaternary deposits at an unknown depth in the Project Area (McLeod, 2017).

The closest locality is due west of the Project Area near the intersection of Hill Street and 12th Street (LACM 1755). This locality yielded a specimen of a horse, *Equus*, at a depth of 43 feet below the



surface. The next closest locality is just north of the easternmost portion of the Project Area, near the intersection of Mission Road and Daly Street around the Golden State Freeway (LACM 2032). This locality produced fossil specimens of pond turtle, *Clemmys mamorata*; ground sloth, *Paramylodon harlani*; mastodon, *Mammuthus americanum*; mammoth, *Mammuthus imperator*; horse, *Equus*; and camel, *Camelops*, at depths ranging from 20–35 feet below the surface. Lastly, at a locality further north near the intersection of Workman Street and Alhambra Avenue, fossils of a turkey, *Meleagris californicus*; sabre-toothed cat, *Smilodon fatalis*; horse, *Equus*; and deer, *Odocoileus*, were recovered from unstated depths in excavations for a storm drain (LACM 1023). The results of the museum records search are presented in Table 1.

Table 1
Vertebrate Localities Reported from within Older Alluvial Deposits
in the Vicinity of the Project Area¹

Locality No. ²	Geologic Unit	Age	Taxa
LACM 1755	Quaternary older sedimentary deposits (43 feet below the street)	Pleistocene	<i>Equus</i> (horse)
LACM 2032	Quaternary older sedimentary deposits (20-35 feet below the surface)	Pleistocene	<i>Clemmys mamorata</i> (pond turtle) <i>Paramylodon harlani</i> (ground sloth) <i>Mammuthus americanum</i> (mastodon) <i>Mammuthus imperator</i> (mammoth) <i>Equus</i> (horse) <i>Camelops</i> (camel)
LACM 1023	Quaternary older sedimentary deposits (unstated depth)	Pleistocene	<i>Meleagris californicus</i> (turkey) <i>Smilodon fatalis</i> (sabre-toothed cat) <i>Equus</i> (horse) <i>Odocoileus</i> (deer)

¹ Source: McLeod (2017).

² LACM = number assigned by NHMLAC.

Findings and Recommendations

Based on the literature review and museum records search results, the paleontological sensitivity was determined for the Project Area in accordance with the SVP’s (2010) sensitivity scale. The near-surface Holocene-age alluvial deposits in the Project Area are determined to have a low paleontological resource potential because they are likely too young to contain fossilized material. Therefore, shallow excavations are unlikely to impact paleontological resources and further paleontological resource management is not recommended. However, should Project-related ground-disturbance extend deeper, into sensitive Pleistocene alluvial deposits or Pliocene rock formations buried at unknown depths within the Project Area and exposed at the ground surface nearby, then further paleontological resource consultation may be required. In the event that an unanticipated fossil discovery is made during Project construction, in



accordance with SVP (2010) guidelines, a qualified professional Paleontologist should be retained to examine the find and to determine if further paleontological resources mitigation is warranted.

The management recommendations set forth below would reduce adverse impacts to paleontological resources to a less than significant level pursuant to the requirements of CEQA. The following measures have been used by professional paleontologists for many years and have proven to be effective in reducing or eliminating adverse impacts to paleontological resources associated with private and public development projects throughout California:

- **Worker’s Environmental Awareness Training.** Prior to the start of construction within a given development site within the Project Area, all field personnel should be briefed regarding the types of fossils that could be found and the procedures to follow should paleontological resources be encountered. Specifically, the training should provide a description of the fossil resources that may be encountered, outline steps to follow when a fossil discovery is made, and provide contact information for the Qualified Paleontologist and on-site monitor(s). The training should be developed by the Qualified Paleontologist and provided as hand-outs or a Power Point Presentation that can be presented concurrently with other environmental training (e.g., cultural and natural resources awareness training, safety training, etc.).
- **Construction Monitoring.** Prior to the commencement of ground-disturbing activities, a Qualified Paleontologist will be retained to prepare and implement a Paleontological Resource Mitigation Program (PRMP) for any development site or undertaking in the Project Area that plans to disturb geologic units with a high paleontological resource potential (i.e., the older Quaternary alluvial deposits). Full-time monitoring is recommended for construction activities (e.g., grading, excavation, ripping, trenching, etc.) that will disturb previously undisturbed deposits determined to have a high paleontological sensitivity, in accordance with criteria set forth by SVP (2010). Monitoring would not be required in areas of previous disturbance or the shallow, younger alluvial deposits as determined by the Qualified Paleontologist.

Monitoring should include the visual inspection of excavated or graded areas, trench sidewalls, spoils, and any other disturbed sediment. If a paleontological resource is discovered, the approved paleontological monitor will have the authority to divert temporarily the construction equipment around the find until it is assessed for scientific significance and collected.

Additionally, bulk sediment samples from geologic units with high paleontological potential should be collected and processed to assess the presence or absence of fossils in the sand-to-gravel fractions within the Project Area. In areas of high sensitivity, monitoring efforts can be reduced or eliminated at the discretion of the Qualified Paleontologist if no fossil resources are encountered after 50 percent of the excavations are completed.

- **Fossil Preparation, Curation, and Reporting.** Upon completion of field work, all significant fossils collected will be prepared for curation in a properly equipped paleontology laboratory. Sediment samples will be screened and any significant fossils recovered will be similarly prepared. Preparation will include the careful removal of excess matrix from fossil materials and the stabilization and repairing of specimens, as necessary. Following laboratory work, all fossil specimens will be identified to the lowest taxonomic level, cataloged, analyzed, and delivered to a regionally accredited museum repository such as the NHMLAC for permanent curation and



storage. The cost of curation is assessed by the repository and is the responsibility of the landowner.

At the conclusion of laboratory work and museum curation, a final report should be prepared to describe the results of the paleontological mitigation monitoring efforts associated with the specific undertaking under the Project. The report will include a summary of the field and laboratory methods, an overview of the geology and paleontology of the development site, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. If the monitoring efforts produced fossils, then a copy of the report will also be submitted to the curation facility.

It has been a pleasure assisting you with this Project. If you have any questions, please do not hesitate to contact me at srohlf@appliedearthworks.com or (831) 809-0172.

Sincerely,

Scott Rohlf
Associate Paleontologist

Program Manager, Paleontology
Applied EarthWorks, Inc.

AE Quality Control Completed:

_____	Name
<u>Paleontology Supervisor</u>	Title
<u>April 26, 2019</u>	Date



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