



9001-9019 LONG BEACH BOULEVARD HABITAT FOR HUMANITY PROJECT

Appendix D
Geology and Paleontological Background Report

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RE: Geology and Paleontology Background of the 9001-9019 Long Beach Boulevard Project, Los Angeles County, California

Dear De Novo Planning Group,

The geology of the project site is mapped by Saucedo et al. (2016) and is entirely underlain by Quaternary young alluvium, unit 2 (Qya₂). The Quaternary young alluvium was deposited during the Holocene and is composed of poorly consolidated floodplain deposits of clay, silt, and sand. Holocene alluvial deposits are typically too young to preserve paleontological resources. However, at depth the Holocene sediments may grade into older buried Pleistocene deposits that have the potential to preserve fossil remains. Pleistocene sedimentary deposits have yielded an abundant and diverse vertebrate fauna throughout California, especially within the Los Angeles Basin. Pleistocene vertebrate fossil specimens of ground sloth, bison, camel, mammoth, pocket gopher, and bird have been reported in older alluvial deposits in the Los Angeles Basin in the vicinity of the Project area (Agenbroad 2003; Bell et al. 2004; Jefferson 1991; Savage et al. 1954; University of California Museum of Paleontology [UCMP], 2022).

Museum Fossil Locality Records

The NHMLA reports that there are no previously recorded vertebrate fossil localities in the Project area; however, museum collections record at least 5 vertebrate localities identified from similar geologic deposits in the vicinity of the Project (Bell, 2023; Table 1). Recovered specimens include mammoth, unspecified vertebrates, and invertebrate fossils; from a depth of 15 feet to 20 feet below ground surface. The results of the museum records search and literature review are presented in Table 1.

Table 1. Vertebrate Localities Reported from within Pleistocene Alluvial Deposits in vicinity of the Project

Locality No.	Geologic Unit	Age	Taxa
LACM IP 2690	Unknown formation	Pleistocene	Acorn barnacle (<i>Megabalanus</i>), scaphopod (<i>Dentalium</i>), (<i>Stagnicola</i>), pond snails (<i>Callianax</i>), moon snail (<i>Euspira</i>), turban snail (<i>Megastrea</i>), Venus clam (<i>Tivela</i>), piddock (<i>Penitella</i>), cardita (<i>Cyclocardia</i>), tellin (<i>Tellina</i>), lucine (<i>Lucinisca</i> , <i>Epilucina</i>), cerith (<i>Lirobittium</i>), sand dollar (<i>Dendraster</i>), cowry (<i>Neobernaya</i>), tower shell (<i>Turritella</i>), dwarf-venus (<i>Nutricula</i>)
LACM VP 3382	Unknown formation	Pleistocene	Mammoth (<i>Mammuthus</i>)
LACM VP 3266	Unnamed formation (calcareous siltstone)	Pleistocene	Uncatalogued vertebrates

LACM VP 3365	Unnamed formation	Pleistocene	Mammoth (Mammuthus)
LACM VP 3382	Unknown formation (brown clay silt)	Pleistocene	Mammoth (Mammuthus)

Source: Bell, 2023

In accordance with Society of vertebrate Paleontology (2010) guidelines, the paleontological sensitivity of the project area was determined based on a literature review and online museum locality search at the UCMP. The results of the study indicate that the geologic units underlying the project area have a low paleontological sensitivity at the surface because Holocene sedimentary deposits, particularly those younger than 5,000 years old, are generally too young to contain fossilized material. The Holocene sediments may be underlain by older Quaternary (Pleistocene) alluvial deposits at an unknown depth. Pleistocene alluvium in the Los Angeles Basin typically has a high paleontological resource sensitivity due to the high potential of those deposits to yield significant vertebrate fossils.

In general, the potential for a given project to result in negative impacts to paleontological resources is directly proportional to the amount of ground disturbance associated with the project; thus, the higher the amount of ground disturbances within geological deposits with a known paleontological sensitivity, the greater the potential for negative impacts to paleontological resources. New ground disturbances are anticipated for the Project; however, the underlying sediment is likely to be Holocene in age to a significant depth, and ground disturbances are not anticipated to result in significant impacts to paleontological resources under Appendix G of State CEQA Guidelines. In the event that a Pleistocene sediments are encountered and a fossil discovery is made during the course of Project development, then in accordance with SVP (2010) guidelines, a qualified professional paleontologist should be retained in order to examine the find and to determine if further paleontological resource mitigation is warranted.

SOURCES

- Agenbroad, L.D. 2003. New localities, chronology, and comparisons for the pygmy mammoth (*Mammuthus exilis*). In J. Reumer (ed.) *Advances in Mammoth Research, Proceedings of the 2nd International Mammoth Conference, Rotterdam, the Netherlands*. DEINSEA 9, p. 1-16.
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- Saucedo, G. J., H. G. Greene, M.P. Kennedy, and S. P. Bezore. 2016. Geologic Map of the Long Beach 30'x60' Quadrangle, California. Department of Conservation, California Geologic Survey, Regional Geologic Map Series, scale 1:100,000.
- Society of Vertebrate Paleontology. 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee.
- University of California Museum of Paleontology (UCMP) Online Database. 2022. UCMP specimen search portal, <http://ucmpdb.berkeley.edu/>.

Sincerely,
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