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March 3, 2025

Adam Cleary
Back Bay Barrels, LLC
3857 Birch Street, Suite 521
Newport Beach, CA 92660

Subject: Paleontological Resources Assessment for the Snug Harbor Project in Newport Beach, Orange County, California (LSA Project Number 20242006)

Dear Mr. Cleary:

LSA conducted a Paleontological Resources Assessment for the Snug Harbor Project (project) in Newport Beach, Orange County, California. The purpose of the assessment was to determine whether paleontological resources may be present within the project site and whether they might be impacted by development of the project, and to make recommendations to mitigate any potential impacts to paleontological resources. The project area contains Young Axial Channel Deposits, which have low sensitivity from the surface to a depth of 10 feet and high paleontological sensitivity below that mark. Additionally, the project area contains Old Paralac Deposits Overlain by Alluvial Fan Deposits, which have high paleontological sensitivity. Development of the project has the potential to impact paleontologically sensitive deposits and the paleontological resources they may contain. In order to mitigate potential impacts to scientifically significant nonrenewable paleontological resources, LSA recommends development of a Paleontological Resources Impact Mitigation Program (PRIMP) and paleontological monitoring for excavations into sediments with high paleontological sensitivity.

PROJECT LOCATION AND DESCRIPTION

The project is located at located at 3100 Irvine Avenue (Assessor's Parcel Number 119-200-41) in Newport Beach. The project is bounded by Irvine Avenue to the north and west, Mesa Drive to the southwest, and Acacia Street to the east. The 15.44-acre project site is depicted on Figure 1 (provided in Attachment B) on the United States Geological Survey (USGS) *Newport Beach, California* 7.5-minute topographic quadrangle map in Township 6 South, Range 10 West, in unsectioned lands of the Santiago De Santa Ana and San Joaquin land grants, San Bernardino Baseline and Meridian (USGS, 1981).

The proposed project includes development of a 5.06-acre surf lagoon. Outdoor areas around the lagoon will be developed to provide seating and lounging areas, wave viewing platforms for spectators, private cabanas with bathrooms and showers, and three warming pools. Two new buildings are proposed. The main building will be three stories tall over a subterranean basement, with a maximum height of 50 feet above grade. It will house ancillary uses such as health and fitness facilities, a surf-related retail store, locker rooms, storage lockers, and food service. A second,

smaller building providing 20 overnight athlete accommodations will be two stories tall and 40-feet above grade. The square footage of the new buildings totals approximately 79,534 square feet.

REGULATORY ENVIRONMENT

State of California

Under State law, paleontological resources are protected by the California Environmental Quality Act (CEQA) and Public Resources Code Section 5097.5.

California Environmental Quality Act (Public Resources Code 21000 et seq.)

CEQA's purpose is to provide a statewide policy of environmental protection. As part of this protection, State and local agencies are required to analyze, disclose, and, when feasible, mitigate the environmental impacts of, or find alternatives to, proposed projects. The *State CEQA Guidelines* (California Code of Regulations 15000 et seq.) provide regulations for the implementation of CEQA and include more specific direction on the process of documenting, analyzing, disclosing, and mitigating environmental impacts of a project. To assist in this process, Appendix G of the *State CEQA Guidelines* provides a sample checklist form that may be used to identify and explain the degree of impact a project will have on a variety of environmental aspects, including paleontological resources (Section VII[f]). As stated in Section 15002(b) (1-3) of the *State CEQA Guidelines*, CEQA applies to governmental action, including activities that are undertaken by, financed by, or require approval from a governmental agency.

California Public Resources Code, Section 5097.5

This law protects historic, archaeological, and paleontological resources on public lands within California and establishes criminal and civil penalties for violations. Specifically, Public Resources Code Section 5097.5 states that "No person shall knowingly or willfully excavate upon, remove, destroy, injure, or deface any ... paleontological or historical feature, situated on public lands" and that public lands include lands "... under the jurisdiction of the state, or any city, county, district, authority, or public corporation, or any agency thereof."

City of Newport Beach

The City of Newport Beach's (City) General Plan sets forth the goals and policies that the City uses to protect and sustain Newport Beach's historic and paleontological resources (City of Newport Beach, 2006). The following excerpt from the City's General Plan contains the goal and policy designed to protect paleontological resources within Newport Beach:

Goal HR 2: Identification and protection of important archeological and paleontological resources within the City.

Policy HR 2.1: New Development Activities

Require that, in accordance with CEQA, new development protect and preserve paleontological and archaeological resources from destruction, and avoid and mitigate impacts to such resources. Through planning policies and permit

conditions, ensure the preservation of significant archeological and paleontological resources and require that the impact caused by any development be mitigated in accordance with CEQA.

Policy HR 2.2: Grading and Excavation Activities

Maintain sources of information regarding paleontological and archeological sites and the names and addresses of responsible organizations and qualified individuals, who can analyze, classify, record, and preserve paleontological or archeological findings.

Require a qualified paleontologist/archeologist to monitor all grading and/or excavation where there is a potential to affect cultural, archeological or paleontological resources. If these resources are found, the applicant shall implement the recommendations of the paleontologist/archeologist, subject to the approval of the City Planning Department.

HR 2.4: Paleontological or Archaeological Materials

Require new development to donate scientifically valuable paleontological or archaeological materials to a responsible public or private institution with a suitable repository, located within Newport Beach, or Orange County, whenever possible.

METHODS

LSA examined geologic maps of the project site and reviewed relevant geological and paleontological literature to determine which geologic units are present within the project site and whether fossils have been recovered within the project site or from those or similar geologic units elsewhere in the region. In October 2024, a fossil locality search was conducted through the Natural History Museum of Los Angeles County (NHMLAC) to determine the status and extent of previously recorded paleontological resources within and surrounding the project site.

RESULTS

Literature Review

Geologic mapping by Morton and Miller (2006) shows that the project site is underlain by Young Axial Channel Deposits and Old Paralic Deposits Overlain by Alluvial Fan Deposits. Although not mapped, Artificial Fill is also present due to the previous construction and use of the project site. These geologic units and their paleontological sensitivities are described in more detail below. Dates for the geologic time intervals referenced in this report are derived from the *International Chronostratigraphic Chart* published by the International Commission on Stratigraphy (Cohen et al., 2023).

Artificial Fill

Artificial Fill consists of sediments that have been removed from one location and transported to another location by human activity rather than by natural means. The transportation distance can vary from a few feet to miles, and composition is dependent on the source and purpose.

Artificial Fill will sometimes contain modern debris such as asphalt, wood, bricks, concrete, metal, glass, plastic, and even plant material. While Artificial Fill may also contain fossils, these fossils have been removed from their original location and are thus out of stratigraphic context. Therefore, they are not considered important for scientific study, and Artificial Fill has no paleontological sensitivity.

Young Axial Channel Deposits

The Young Axial Channel Deposits are Holocene to late Pleistocene in age (less than 126,000 years ago) and consist of slightly to moderately consolidated silt, sand, and gravel (Morton and Miller, 2006). They formed as streams and washes carried sediment down from higher elevations in the San Joaquin Hills and foothills of the Santa Ana Mountains.

Although Holocene (less than 11,700 years ago) deposits can contain remains of plants and animals, only those from the middle to early Holocene (4,200–11,700 years ago; Walker et al., 2012) are considered scientifically important (SVP, 2010), and fossils from this time interval are not very common. The Holocene deposits overlie older, Pleistocene deposits, which have produced scientifically important fossils elsewhere in Orange County and the region (Jefferson 1991a, 1991b; Miller, 1971; Reynolds and Reynolds, 1991; Springer et al., 2009). These older, Pleistocene deposits span the end of the Rancholabrean North American Land Mammal Age (NALMA), which dates from 11,000 to 240,000 years ago (Sanders et al., 2009) and was named for the Rancho La Brea fossil site in central Los Angeles. The presence of *Bison* defines the beginning of the Rancholabrean NALMA (Bell et al., 2004), but fossils from this time also include other large and small mammals, reptiles, fish, invertebrates, and plants (Jefferson, 1991a, 1991b; Miller, 1971; Reynolds and Reynolds, 1991; Springer et al., 2009). There is a potential to find these types of fossils in the older sediments of this geologic unit, which may be encountered below a depth of approximately 10 feet (ft). Therefore, these deposits are assigned low paleontological sensitivity from the surface to a depth of 10 ft and high sensitivity below that mark.

Old Paralic Deposits Overlain by Alluvial Fan Deposits

Geologic mapping by Morton and Miller (2006) shows that the project area contains Old Paralic Deposits Overlain by Alluvial Fan Deposits, which are late to middle Pleistocene in age (11,700–781,000 years ago). They are composed of poorly sorted mixtures of silt, sand, and cobbles that are reddish-brown in color and capped by discontinuous, thin layers of younger, locally derived sands (Morton and Miller, 2006). These deposits originally accumulated in shallow marine, beach, and estuarine environments, and since have been uplifted and exposed, forming wave-cut platforms on which younger alluvial deposits formed (Morton and Miller, 2006).

Because these deposits accumulated in marine and estuarine environments during the late to middle Pleistocene, they have the potential to preserve both marine and terrestrial animals and

plants from the Rancholabrean and Irvingtonian NALMAs (Bell et al., 2004; Sanders et al., 2009). Fossils recovered from these NALMAs around Southern California include large and small mammals, reptiles, fish, invertebrates, and plants (Bell et al., 2004; Jefferson, 1991a, 1991b; Miller, 1971; Reynolds and Reynolds, 1991; Springer, 2009). Because there is a potential to encounter these types of fossils in the Old Paralic Deposits Overlain by Alluvial Fan Deposits, they are considered to have high paleontological sensitivity.

Fossil Locality Search

According to the fossil locality search conducted by the NHMLAC, there are no known fossil localities within the boundaries of the project, but there are five localities near the project from geologic units within or similar to those found within the project area. LACM IP 4929, located in the drainage channel north of Irvine Avenue in Costa Mesa, yielded invertebrate fossils (*Ostrea* and *Anomia*). LACM IP 31222, from an unspecified location in Newport Beach, yielded Venerid bivalve (*Chione*). The southwest end of the Newport Freeway, between Santa Isabel Avenue and 23rd Street, produced several fossils, including camel (Camelidae), sea turtle (Cheloniidae), uncatalogued fish and birds, and invertebrates (*Entobalottia*, *Caesia*, *Volvania*, *Ala*, *Eulithidium*, *Chama*, *Glossaulax*, *Agthistoma*, *Sinum*, *Chlorostoma*, *Calianax*, *Ophidiodermella*, *Serpulorbis*, *Argopecten*, and others). LACM VP 6370, near the intersection of Superior Avenue and Pacific Coast Highway, yielded horse (*Equus*), other unspecified mammals, and invertebrates such as clams (*Tivela*, *Donax*, *Lucinisca*), scaphopod (*Dentalium*, *Antalis*), and marine gastropods (*Glossaulax*, *Chlorostoma*). At the final locality, LACM IP 6281, from the south side of a bluff south of Bayview School and west of the San Joaquin Gun Club, several invertebrates were recovered, including *Crassinella*, *Lucinoma*, *Dendraster*, *Cyclocardia*, *Entobia*, *Sessilia*, *Dentalium*, *Semele*, *Homalopoma*, *Caryocorbula*, *Diplodonta*, *Anomia*, *Chione*, *Chionopsis*, *Mexicardia*, *Donax*, and *Chrysallida*. A copy of the NHMLAC fossil locality search results letter is included in Attachment C.

RECOMMENDATIONS

The project area contains Young Axial Channel Deposits, which have low sensitivity from the surface to a depth of 10 feet and high paleontological sensitivity below that mark. Additionally, the project area contains Old Paralic Deposits Overlain by Alluvial Fan Deposits, which have high paleontological sensitivity. Development of the project has the potential to impact paleontologically sensitive deposits and the paleontological resources they may contain. In order to mitigate potential impacts to scientifically significant nonrenewable paleontological resources, LSA recommends the following mitigation measure:

- PALEO-1** Prior to commencement of any grading activity on site, a paleontologist shall be retained to develop a Paleontological Resources Impact Mitigation Program (PRIMP) for this project. The PRIMP shall include the methods that will be used to protect paleontological resources that may exist within the project area as well as procedures for monitoring, fossil preparation and identification, curation into a repository, and preparation of a report at the conclusion of grading. The PRIMP shall be consistent with the guidelines of the Society of Vertebrate Paleontology (SVP) and include, but not be limited to, the following:

- Excavation and grading activities in deposits with high paleontological sensitivity (Young Axial Channel Deposits below a depth of 10 feet and Old Paralic Deposits Overlain by Alluvial Fan Deposits) shall be monitored by a paleontological monitor following a PRIMP. No monitoring is required for excavations in deposits with no paleontological sensitivity (Artificial Fill).
- If paleontological resources are encountered during the course of ground disturbance, the paleontological monitor shall have the authority to temporarily redirect construction away from the area of the find in order to assess its significance. In the event that paleontological resources are encountered when a paleontological monitor is not present, work in the immediate area of the find shall be redirected and a paleontologist should be contacted to assess the find for significance. If determined to be significant, the fossil shall be collected from the field.
- Collected resources shall be prepared to the point of identification, identified to the lowest taxonomic level possible, cataloged, and curated into the permanent collections of a scientific institution.
- At the conclusion of the monitoring program, a report of findings shall be prepared to document the results of the monitoring program.

Implementation of this mitigation measure will ensure that project impacts on paleontological resources will be reduced to a level that is less than significant.

Sincerely,

LSA Associates, Inc.



Kelly Vreeland
Senior Paleontologist

Attachments: A: References
B: Figures
C: Fossil Locality Search Results from the NHMLAC

ATTACHMENT A

REFERENCES

- Bell, C.J., E.L. Lundelius Jr., A.D. Barnosky, R.W. Graham, E.H. Lindsay, D.R. Ruez Jr., H.A. Semken Jr., S.D. Webb, and R.J. Zakrzewski
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Society of Vertebrate Paleontology (SVP)

- 2010 Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Society of Vertebrate Paleontology. Impact Mitigation Guidelines Revision Committee. 11 pp.

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- 2009 The Diamond Valley Lake Local Fauna: Late Pleistocene Vertebrates from Inland Southern California. In L.B. Albright, III, ed., *Papers in Geology, Vertebrate Paleontology, and Biostratigraphy in Honor of Michael O. Woodburne*, Museum of Northern Arizona Bulletin 65, pp. 217–236.

United States Geological Survey (USGS)

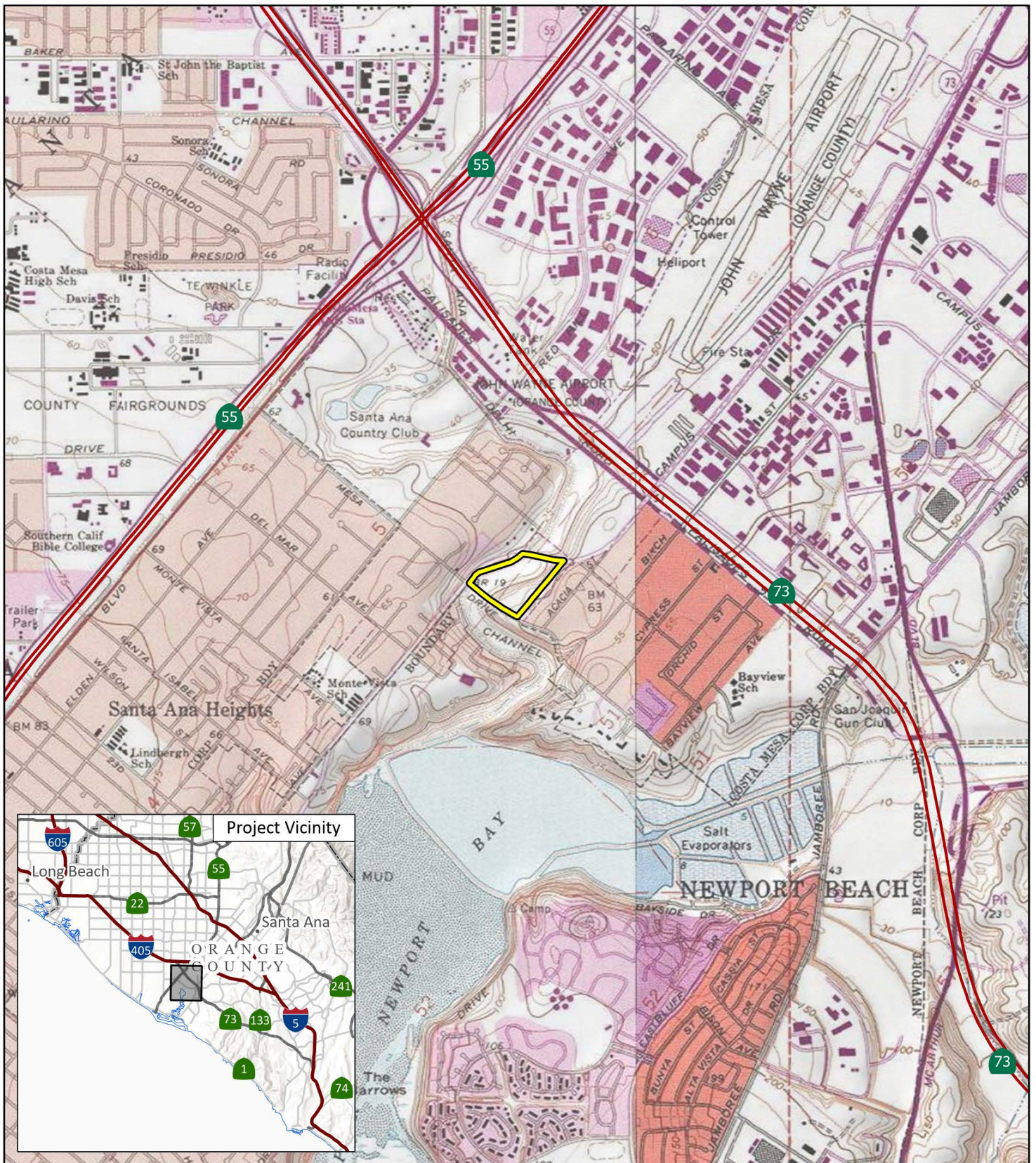
- 1981 *Newport Beach, California* 7.5-minute topographic quadrangle. Published 1965, photorevised 1981. United States Geological Survey, Denver, Colorado.

ATTACHMENT B

FIGURES

Figure 1: Project Location and Vicinity Map

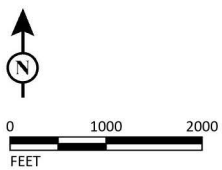
Figure 2: Geology Map



LSA

 Project Location

FIGURE 1



SOURCE: USGS 7.5' Quad - Newport Beach (1981), CA

I:\2024\2024006\GIS\Pro\Snug Harbor Project.aprx (11/25/2024)

Snug Harbor Project
Project Location and Vicinity



LSA



0 500 1000
FEET

SOURCE: Morton and Miller (2006)

I:\2024\20242006\GIS\Pro\Newport Beach Golf Course Project\Newport Beach Golf Course Project.aprx (11/26/2024)

 Project Location

Geology

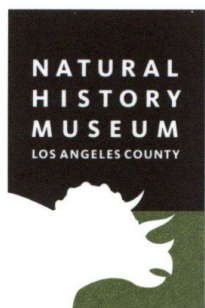
-  Qaf - Artificial Fill
-  Qes - Very Young Estuarine Deposits
-  Qop - Old Paralic Deposits, Undivided
-  Qopf - Old Paralic Deposits Overlain by Alluvial-fan Deposits
-  Qya - Young Axial-channel Deposits
-  Water Body

FIGURE 2

Snug Harbor Project
Geology Map

ATTACHMENT C

FOSSIL LOCALITY SEARCH RESULTS FROM THE NHMLAC



Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Research & Collections

e-mail: paleorecords@nhm.org

November 3, 2024

LSA Associates, Inc.
Attn: Kelly Vreeland

re: Paleontological resources records search for the Newport Beach Golf Course Project (LSA Proj. # 20242006)

Dear Kelly:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for proposed development at the Newport Beach Golf Course Project area as outlined on the portion of the Newport Beach USGS topographic quadrangle map that you sent to me via e-mail on October 30, 2024. We do not have any fossil localities that lie directly within the proposed project area, but we do have fossil localities nearby from the same sedimentary deposits that may occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County (NHMLA).

Locality Number	Location	Formation	Taxa	Depth
LACM IP 4929	Drainage channel, north of Irvine Avenue, Costa Mesa	Palos Verdes Sand	Invertebrates (<i>Ostrea</i> and <i>Anomia</i>)	Surface
LACM IP 31222	Newport, California	Unknown formation (Pleistocene)	Venerid bivalve (<i>Chione</i>)	Unknown
LACM VP 4219	Southwest end of the Newport Fwy between Santa Isabel Ave & 23rd St	Palos Verdes Sand (coarse poorly sorted friable sand)	Camel family (Camelidae), sea turtle (Cheloniidae); uncatalogued fish and birds; invertebrates (<i>Entobia</i> , <i>Lottia</i> , <i>Caesia</i> , <i>Volvania</i> , <i>Ala</i> , <i>Eulithidium</i> , <i>Chama</i> , <i>Glossaulax</i> , <i>Agathistoma</i> , <i>Sinum</i> , <i>Chlorostoma</i> , <i>Calianax</i> , <i>Ophiodermella</i> , <i>Serpulorbis</i> , <i>Argopecten</i> , and others)	30 feet bgs
LACM VP 6370	near the intersection of Superior Avenue & Pacific Coast	Terrace deposits (Pleistocene, silty sandstones)	Horse (<i>Equus</i>), other unspecified mammals; Invertebrates: clam (<i>Tivela</i> , <i>Donax</i> , <i>Lucinisca</i>), scaphopod (<i>Dentalum</i> , <i>Antalis</i>),	Unknown (found during grading for parking lot)

Locality Number	Location	Formation	Taxa	Depth
	Highway; Newport Beach		marine gastropods (<i>Glossaulax</i> , <i>Chlorostoma</i>)	construction)
	On the south side of a bluff, south of Bayview School and west of the San Joaquin Gun Club	Palos Verdes Sand	Invertebrates (<i>Crassinella</i> , <i>Lucinoma</i> , <i>Dendraster</i> , <i>Cyclocardia</i> , <i>Entobia</i> , <i>Sessilia</i> , <i>Dentalium</i> , <i>Semele</i> , <i>Homalopoma</i> , <i>Caryocorbula</i> , <i>Diplodonta</i> , <i>Anomia</i> , <i>Chione</i> , <i>Chionopsis</i> , <i>Mexicardia</i> , <i>Donax</i> , <i>Chrysallida</i>)	Surface
LACM IP 6281				

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

This records search covers only the records of the NHMLA. It is not intended as a paleontological assessment of the project area for the purposes of CEQA or NEPA. Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a full paleontological assessment of the project area be conducted by a paleontologist meeting Federal (43 Code of Federal Regulations Part 49.110) or Society of Vertebrate Paleontology standards.

Sincerely,



Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice