



SAN DIEGO NATURAL HISTORY MUSEUM

BALBOA PARK - SAN DIEGO SOCIETY OF NATURAL HISTORY - ESTABLISHED 1874

9 August 2016

Rachel Ruston
SDG&E Environmental Programs/Environmental Services
8315 Century Park Court CP21E
San Diego, CA 92123

RE: Paleontological Record Search – SDG&E TL 695/6971 Reconductor Project
(eTS Number 25240)

Dear Ms. Ruston:

This letter presents the results of a paleontological record search conducted for the SDG&E TL 695/6971 Reconductor project. The approximately 40.4 mile-long project alignment spans the northernmost part of Camp Pendleton in San Diego County and the southernmost part of the City of San Clemente in Orange County, CA (Appendix 1). The southernmost end of the alignment is located on the southeast side of the mouth of San Onofre Canyon. One segment of the alignment travels northwest until crossing Cristianitos Road, then turns north and continues to the San Diego County – Orange County border, where it continues east and north to terminate at the Talega Substation. An additional segment of the alignment roughly follows Interstate 5 northwest to the San Diego County – Orange County border, where it turns north to follow the border for approximately 0.8 miles to terminate near Vista Bahia Park. Additional staging areas and access routes lie adjacent to the project alignment along its full length, as well as on a mesa top east of Cristianitos Creek, approximately 1.2 miles east of the northern segment of the alignment, and another off of Lemon Grove Road approximately 13.6 miles south of the southernmost extent of the project alignment.

A search of the paleontological records at the San Diego Natural History Museum (SDNHM) was conducted in order to determine if any documented fossil collection localities occur along the project alignment or within the immediate surrounding area. The SDNHM has nine recorded fossil localities within a mile radius of the project alignment and associated staging areas (Appendix 2). Three of these localities are from geologic units that are not anticipated to be impacted by construction: the early to middle Miocene-age Topanga Formation and the Pliocene-to Pleistocene-age Niguel Formation. The remaining six localities are from the middle Miocene-age Monterey Formation and the middle Eocene-age Santiago Formation, and are described in greater detail below.

Additionally, in recognition of the direct relationship between paleontological resources and the geological rock units within which they are preserved, a review of published geological mapping along the project alignment was conducted to determine the specific rock units underlying the alignment. Each unit was subsequently assigned a paleontological resource sensitivity following the County of San Diego Guidelines (Deméré and Walsh, 1993). Published geological reports (e.g., Kennedy and Tan, 2007) reveal that the proposed project structures will impact nine geological rock units. Each of these rock units and their paleontological sensitivities

are summarized in detail below, and a list of specific project components underlying rock units of moderate or high paleontological sensitivity are included as Appendix 3.

GEOLOGICAL ROCK UNITS UNDERLYING THE ALIGNMENT:

HOLOCENE ALLUVIAL DEPOSITS – Holocene alluvial deposits (mapped by Kennedy and Tan, 2007, as Quaternary young alluvial flood plain and young alluvial fan deposits) occur in modern floodplains along San Mateo Creek and San Onofre Creek, which are intersected by the southern half of the project alignment. These deposits are generally less than 10,000 years old, and are assigned a low sensitivity based on their young geologic age and the lack of known fossil localities; however, these deposits may overlie sensitive units that could be impacted where the contact is relatively shallow.

QUATERNARY LANDSLIDE DEPOSITS – Landslide deposits of Holocene and Pleistocene age (less than 750,000 years old) underlie much of the northern half of the project alignment. These deposits appear to be derived from the Capistrano Formation (high paleontological sensitivity, see below) and the Monterey Formation (high paleontological sensitivity, see below), and it is possible that fossils may be discovered. However, without associated stratigraphic data, fossil remains may be of little scientific value. Accordingly, these deposits are assigned a low paleontological sensitivity.

PLEISTOCENE ALLUVIAL FLOOD PLAIN DEPOSITS – Pleistocene-aged (approximately 10,000 to 2.6 million years old) alluvial flood plain deposits (mapped by Kennedy and Tan, 2007, as Quaternary old and very old alluvial flood plain deposits) underlie the project alignment and a guard structure (GS 2) along the upper margins of the north sides of San Mateo Creek and Arroyo San Onofre; these deposits also underlie three staging areas (Area 62 Helo ILA, Helo ILA near Cristianitos Road, and Basilone Road Staging Yard). Fossil remains from these deposits are somewhat rare, but scientifically significant terrestrial vertebrate fossils (e.g., reptiles, birds, small mammals, and large-bodied “Ice-Age” mammals such as mammoth, bison, horse, and camel) have been recovered from several locations in San Diego County (Deméré and Walsh, 1993). Therefore, these deposits are assigned a high resource sensitivity.

BAY POINT FORMATION – The nearshore marine deposits of the Pleistocene-age (approximately 10,000 to 750,000 years old) Bay Point Formation (mapped by Kennedy and Tan, 2007, as Quaternary old paralic deposits, units 1-7) intermittently underlie the project alignment near the coast, and on either side of the mouths of San Mateo Creek and San Onofre Creek. Further, these deposits occur in the proposed underground segment of the project, as well as three staging areas (SDG&E Lot 4 Staging Yard, Songs Mesa Staging Yard, and Lemon Grove Staging Yard). The Bay Point Formation has been assigned a high resource sensitivity for the diverse and well-preserved fossils of marine invertebrates (e.g., mollusks) and marine vertebrates (e.g., sharks, rays, and bony fishes) that have been recovered from these deposits.

LINDAVISTA FORMATION – The marine and/or non-marine terrace deposits of the early to middle Pleistocene-age (approximately 0.5 to 1.5 million years old) Lindavista Formation (mapped by Kennedy and Tan, 2007, as Quaternary very old paralic deposits, units 10-13) underlie the project alignment on its westernmost segment along the San Diego County – Orange County border, and along the southeast margin of San Mateo Canyon. While fossil localities are rare within the Lindavista Formation, the fossilized remains of marine invertebrates (e.g., clams,

scallops, snails, barnacles, and sand dollars) and marine vertebrates (e.g., sharks and baleen whales) have been collected in southwestern San Diego County, so it is assigned a moderate resource sensitivity.

SAN MATEO FORMATION – Nearshore marine deposits of the late Pliocene- to late Miocene-age (approximately 2 to 7 million years old) San Mateo Formation underlie the southern portions of the project alignment, along the San Diego County – Orange County border and along the margins of San Mateo Canyon and San Onofre Canyon; these deposits also underlie the southern corner of the San Mateo Staging Yard. The San Mateo Formation has produced abundant and scientifically significant fossil remains of marine vertebrates (e.g., sharks, rays, bony fish, sea birds, and marine mammals) and terrestrial vertebrates (e.g., horses, camels, llamas, and peccaries), while the exposures on Camp Pendleton, specifically, have produced diverse assemblages of marine invertebrates (e.g., clams, scallops, snails, and sea urchins) (Deméré and Walsh, 1993). The San Mateo Formation has, therefore, been assigned a high paleontological resource sensitivity.

CAPISTRANO FORMATION – The marine deposits of the late Miocene-age (approximately 5 to 7 million years old) Capistrano Formation underlie the project alignment along an approximately 1.7 mile-long segment just north of San Mateo Creek. While few fossils have been recovered from this formation in San Diego County, the Capistrano Formation is known to produce diverse assemblages of fossil marine vertebrates (e.g., sharks, rays, bony fishes, sea birds, toothed whales, baleen whales, sea cows, fur seals, and walruses) in Orange County, and has thus been assigned a high resource sensitivity.

MONTEREY FORMATION – Marine deposits of the middle to late Miocene-age (approximately 8 to 16 million years old) Monterey Formation underlie the northern portion of the project alignment, along the east-trending segment that follows the San Diego County – Orange County border. SDNHM has four recorded fossil localities from the Monterey Formation within one mile of the project area. These localities yielded fossilized remains of marine invertebrates (e.g., crabs) and marine vertebrates (e.g., sharks, bony fish, sea lions, dolphins, baleen whales, and sea cows). The Monterey Formation is also known for its diverse and well-preserved assemblages of marine microfossils (e.g., diatoms, silicoflagellates, and radiolarians commonly found in the siliceous shales, and diatomites, coccoliths, and foraminiferans commonly found in the argillaceous shales) (Deméré and Walsh, 1993). For the extremely diverse assemblages preserved in its deposits, the Monterey Formation has been assigned a high paleontological resource sensitivity.

SANTIAGO FORMATION – Marine and non-marine deposits of the middle Eocene-age (approximately 40 to 49 million years old) Santiago Formation underlie the northernmost portions of the project alignment in Orange County. The northernmost staging areas are also underlain by the Santiago Formation. The SDNHM has two recorded fossil localities from the Santiago Formation within one mile of the project site. These localities yielded fossilized remains of marine invertebrates (e.g., oysters) and terrestrial vertebrates (e.g., birds and rodents). Members B and C of the Santiago Formation preserve abundant and scientifically important assemblages of terrestrial mammals, as well as marine and estuarine mollusks (Member B), and are assigned a high resource sensitivity on this basis.

SUMMARY AND RECOMMENDATIONS:

Given the high paleontological sensitivity of six of the geologic units underlying the project alignment (e.g., Pleistocene old alluvial flood plain deposits, Bay Point Formation, San Mateo Formation, Capistrano Formation, Monterey Formation, and Santiago Formation) and the moderate paleontological sensitivity of the Lindavista Formation (Deméré and Walsh, 1993), as well as known paleontological resources from these formations in both San Diego and Orange counties, any proposed excavation activities (including grading at staging areas) that extend deep enough to encounter previously undisturbed deposits of these units have the potential to impact paleontological resources preserved in these deposits. For these reasons, implementation of a complete paleontological resource mitigation program during ground-disturbing activities is recommended.

The information contained within this paleontological record search should be considered private and is the sole property of the San Diego Natural History Museum. Any use or reprocessing of information contained within this document beyond the scope of the SDG&E TL 695/6971 Reconstructor project is prohibited.

If you have any questions concerning these findings please feel free to contact me at 619-255-0321 or kmccomas@sdnhm.org.

Sincerely,



Katie McComas
Paleontology Collections Assistant
Department of Paleontology

Enc: Appendix 1: Project Map

Appendix 2: SDNHM fossil localities within a one-mile radius of the project

Appendix 3: List of project components underlain by high or moderate sensitivity rock units

Literature Cited:

Deméré, T.A. and Walsh, S.L. 1993. Paleontological Resources, County of San Diego. Prepared for the San Diego Planning Commission: 1-68.

Kennedy, M.P. and Tan, S.S. 2007. Geologic Map of the Oceanside 30' x 60' Quadrangle, California. California Geological Survey, Regional Geologic Map Series 1:100,000 scale, map no. 2.