Appendix I
Paleontological Resources Memorandum

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MEMORANDUM

To:	Shelly Long - SoCalGas
From:	Michael Williams, Ph.D.
Subject:	Paleontological Resources Review – Honor Rancho Compressor Modernization Project
Date:	August 2, 2022
cc:	Matthew Valerio, Vanessa Scheidel, Sarah Siren, Dudek
Attachment(s):	Confidential Attachment A. Paleontological Records Search Results Letter (not included)

Dudek has received and reviewed the results of a paleontological resources records search; conducted a paleontological resources literature and geological map review, and a paleontological survey; and is providing this memo for the Honor Rancho Compressor Modernization Project (project) to consider the potential for project implementation to result in impacts to paleontological resources. The South Coast Air Quality Management District (South Coast AQMD) is the lead agency responsible for compliance with the California Environmental Quality Act (CEQA) for this project. A paleontological resources records search was conducted by the Natural History Museum of Los Angeles County (LACM). Dudek also conducted a review of published geological maps and paleontological literature. This paleontological resources study was completed in accordance with CEQA and guidelines from the Society of Vertebrate Paleontology ([SVP] 2010).

Project Location and Description

Honor Rancho is located at 28300 Brady Pkwy. in the City of Santa Clarita, Los Angeles County, California, as depicted on Figure 3-1, Regional and Local Vicinity Map. Honor Rancho is SoCalGas's second-largest underground storage field, spanning 660 acres, and has been safely operating since 1975. Honor Rancho consists of 13 Assessor's Parcel Numbers (APNs) (2866-004-802, 2866-004-803, 2866-004-804, 2866-004-907, 2866-004-908, 2866-004-913, 2866-005-031, 2866-005-801, 2866-005-805, 2866-005-808, 2866-005-809, 2866-006-801, and 2866-006-806) and affects both fee (surface and minerals) and leasehold lands (oil and gas leasehold and gas storage rights). Of the 13 parcels, only APNs 2866-005-805, 2866-005-808, 2866-005-809, 2866-006-801, 2866-006-806, and 2866-004-802 would be affected by the HRCM project.

Of the affected parcels, APNs 2866-006-806 and 2866-039-030 would include the SCE Retention Substation and electrical interconnection. As shown on Figure 3-1, approximately half of the facility is in the City of Santa Clarita (City) and half is in unincorporated Los Angeles County (County). The property within the City is designated by the General Plan as Business Park (BP) and is zoned Business Park (BP). The property within the unincorporated County is designated and zoned Heavy Agriculture (A 2 5). Major transportation corridors in the vicinity of Honor Rancho include Interstate (I) 5) to the west and Newhall Ranch Road/State Route (SR) 126 to the south. Primary access to the HRCM project site is from the facility entrance on Brady Pkwy., which connects to West Rye Canyon Road.

The HRCM project would require offsite improvements related to the SCE Components. SCE offsite infrastructure improvements would occur at the existing Saugus Substation located approximately 1.6 miles south of the proposed on-site Retention Substation (APN 2861-061-800). Electrical computer system upgrades, but no construction activities, would occur at the Haskell Substation located approximately 4 miles east of the proposed on-site Retention Substation (APN 2849-003-801) and at the Lockheed Substation located approximately 0.9 miles northeast of the proposed on-site Retention Substation (APN 2866-059-018).

Land use in the area around Honor Rancho includes correctional facilities and undeveloped land to the north and west, commercial shopping centers to the east and south, and the Los Angeles Department of Water and Power Pardee Substation to the south. Major transportation corridors include Interstate 5 to the west and Newhall Ranch Road/State Route 126 to the south. Primary access to the HRCM Project site is from the facility entrance on West Rye Canyon Road.

The project site is somewhat isolated from the City in the hills, but there is commercial development to the south and east of the project site and The City of Santa Clarita primary lies on sandstone and shale bedrock with loosely consolidated sedimentary deposits. The specific geologic setting of porous rock formations Honor Rancho makes it uniquely suited to natural gas storage. The facility is situated on what have been natural reservoirs of oil and gas for millions of years. These subterranean rock formations are sealed by impermeable shale rock more than 2,000 feet thick and more than a mile beneath the Earth's surface. The nearest natural fresh water source to the project site is the Santa Clara River approximately 0.5-mile to the south. The natural flora and fauna in the project vicinity prior to European colonization would have consisted of annual grasses and forbs, as well as various terrestrial mammals, avian, and reptiles.

The proposed HRCM project consists of five primary components: 1) one new compressor building including a compressor system upgrade that would replace five compressor gas lean-burn engines with four new compressor gas lean-burn engines and two new electric-motor-driven compressors (EDCs), including ancillary equipment; 2) pending CPUC disposition of SoCalGas's General Rate Case, an Alternative Renewable Energy system would include hydrogen electrolyzers, hydrogen storage, and fuel blending equipment to integrate green hydrogen into compressor combustion fuel and a hydrogen vehicle fueling station for company vehicles; 3) an electric microgrid comprising an energy storage system (ESS) and a natural-gas-fueled solid oxide fuel cell (SOFC) system to provide critical auxiliary and administrative base load and standby electricity; 4) other site improvements, including relocated and new pipeline alignments and connections, roadway/circulation improvements, and abandonment of one well; and 5) a new SCE substation, new and replacement electrical poles, and electrical interconnection to support the increased electric load, as well as telecommunication interconnections. Once rigorous performance testing of the new compressor replacement equipment is completed, the existing compressor assets would be shut down and isolated.

FIGURE I
Existing Project Site
Honor Rancho Compressor Modernization Project

Regulatory Framework

California Environmental Quality Act

Paleontological resources, which are limited, nonrenewable resources of scientific, cultural, and educational value, are recognized as part of the environment under the State CEQA Guidelines. This study satisfies project requirements in accordance with CEQA (13 PRC, 2100 et seq.) and Public Resources Code Section 5097.5 (Stats 1965, c 1136, p. 2792). This analysis also complies with guidelines and significance criteria specified by the Society of Vertebrate Paleontology (SVP 2010).

Paleontological resources are explicitly afforded protection by CEQA, specifically in Section VII(f) of CEQA Guidelines Appendix G, the "Environmental Checklist Form," which addresses the potential for adverse impacts to "unique paleontological resource[s] or site[s] or … unique geological feature[s]." This provision covers fossils of signal importance – remains of species or genera new to science, for example, or fossils exhibiting features not previously recognized for a given animal group – as well as localities that yield fossils significant in their abundance, diversity, preservation, and so forth. Further, CEQA provides that a resource shall be considered "historically significant" if it

has yielded or may be likely to yield information important in prehistory (PRC 15064.5 [a][3][D]). Paleontological resources would fall within this category. The PRC, Chapter 1.7, sections 5097.5 and 30244 also regulates removal of paleontological resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.

California PRC Section 5097.5

California PRC Section 5097.5 provides protection for paleontological resources on public lands, where Section 5097.5(a) states, in part, that:

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over the lands.

Paleontological Resources

Paleontological resources are the remains or traces of plants and animals that are preserved in Earth's crust, and per the Society of Vertebrate Paleontology ([SVP] 2010) guidelines, are older than written history or older than approximately 5,000 years. They are limited, nonrenewable resources of scientific and educational value, which are afforded protection under state laws and regulations. This study satisfies requirements in accordance with state guidelines (13 PRC, 2100 et seq.) and Public Resources Code Section 5097.5 (Stats 1965, c 1136, p. 2792). This analysis also complies with guidelines and significance criteria specified by SVP (2010). Table 1 provides definitions for high. low, undetermined, and no paleontological resource potential, or sensitivity, as set forth in SVP (2010) guidelines.

Table 1. Paleontological Resource Sensitivity Criteria

Resource Sensitivity / Potential	Definition
High	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. Rock 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 that 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). Paleontological potential consists of both (1) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils and (2) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data. Rock units that contain potentially datable organic remains older than late Holocene, including deposits associated with animal nests or

Table 1. Paleontological Resource Sensitivity Criteria

Resource Sensitivity / Potential	Definition
	middens, and rock units that may contain new vertebrate deposits, traces, or trackways are also classified as having high potential.
Low	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	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 whether 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 paleontological resource potential require neither protection nor impact mitigation measures relative to paleontological resources.

Source: SVP 2010.

Geological Setting

The project is located within the central Transverse Ranges Geomorphic Province, which extends from Point Conception in the west to the San Bernardino Mountains in the east. The province also includes the San Gabriel, Santa Monica, and Santa Ynez Mountains and the offshore San Miguel, Santa Rosa, and Santa Cruz Islands. (California Geological Survey 2002; Morton and Miller 2006). This geomorphic province structure is east-west trending and is oblique to the normal northwest trend of coastal California.

According to geological mapping by Dibblee and Ehrenspeck (1996) at a 1:24,000 scale, the project site is underlain by Holocene (<11,700 years ago) alluvium (map unit Qa) and the Pleistocene (approximately 774,000 years ago to 2.58 million years ago) upper Saugus Formation (map unit Qts). In general, Quaternary alluvium consists of unconsolidated gravel sand, and clay deposited by water in valleys or at the base of slopes (alluvial fans), sediments of the upper Saugus Formation are weakly indurated, interstratified, light gray pebble conglomerates and sandstones and greenish to grayish claystones (Dibblee and Ehrenspeck 1996).

Holocene alluvium is generally too young on the surface and at shallow depths to contain significant paleontological resources and has low paleontological sensitivity. However, with depth, the paleontological sensitivity increases to moderate or high. The Saugus Formation has yielded numerous scientifically significant marine and terrestrial invertebrate and vertebrate specimens and has high paleontological sensitivity. The Sunshine Ranch Member,

which does not crop out in the project area, is typically marine and has produced fossil mollusks and echinoids in the San Fernando Pass area which have been documented in the published scientific literature (Geiger and Groves 1999; Winterer and Durham 1962). The upper Saugus Formation, which is present within the project area, is terrestrial and vertebrate fossils have been recovered from the unit, including mammoth (*Mammuthus* sp.), bison (*Bison* sp.), deer (Cervidae), horse (*Equus* sp.), and tapir (*Tapirus* sp.) (URS 2012; Winterer and Durham 1962).

Paleontological Records Search

Dudek requested a paleontological records search from the LACM on March 24, 2022, and the results were received on April 02, 2022. The LACM did not report any fossil localities from within the project site, but they do have nearby localities from Saugus Formation deposits on the surface and at depth (Confidential Attachment A). The records search results are summarized in Table 2 below.

Table 2. Paleontological Records Search Results

LACM Locality Number	Location	Formation	Lithology	Taxa	Depth Below Surface
LACM VP* 6062	Halsey Canyon – Castaic Junction	Saugus	Fine-grained, sandy siltstone	Anguid lizard (*Gerrhonotus*); rabbit (Leporidae); pocket gopher (*Thomomys*); pocket mouse (*Perognathus*)	Unknown
LACM VP* 6063	Along Franklin Parkway West – Castaic Junction	Saugus	Undisclosed	Horse (*Plesippus*)	Unknown
LACM VP* 6804	Near Saugus Elementary School	Saugus	Undisclosed	Horse (*Equus*)	Surface
LACM VP* 7988 - 7989	Golden Valley Road – Santa Clarita	Saugus	Paleosol bounded by conglomerate strata	Abundant rodent remains (Rodentia)	Unknown
LACM VP* 2297	Upper San Fernando Reservoir	Unknown Pleistocene Formation	Undisclosed	Bison (*Bison*)	75 feet
LACM VP* 5745	North of Pala Road - Sylmar	Unknown Pleistocene Formation	Indurated, pebbly clay	Mastodon (*Mammut*) and horse (*Equus*)	Unknown
LACM IP** 31382	West of Castaic Junction	Pico	Undisclosed	Unspecified invertebrates	Surface

Source: LACM Paleontological Records Search Results
* Vertebrate Paleontology
** Invertebrate Paleontology

Paleontological Survey

Dudek paleontologist, Kira Archipov, conducted a paleontological pedestrian survey of the project site on March 23, 2022. The survey was conducted to determine if any surficial paleontological resources are present on the project site and to verify geological mapping. The survey utilized standard paleontological survey procedures and techniques and consisted of systematic surface inspection, were possible, of the project site on 15-meter intervals (approximately 50 feet) transects. The ground surface was examined for the presence of surficial fossils. Particular attention was paid to ground disturbances such as access roads, burrows, and eroded hillsides, which were visually inspected for exposed subsurface fossils and sediments. During the survey, sedimentological and taphonomical characteristics were noted on exposed rock outcrops.

The majority of the project site has been developed and is in use as an oil field (Figure 2), any undisturbed terrain consisted of modestly sloping hillsides with moderately dense cover of vegetation including grasses, shrubs, and a few taller trees (Figure 3). Much of the ground surface was obscured by vegetation when the survey was conducted; however, the Saugus Formation was observed along roadcuts and an eroded hillside within the project site. No fossils were observed during the paleontological survey.

Figure 2. Photograph showing a developed portion of project site in Area 1. View to the southwest.

Figure 3. Photograph showing dense vegetative cover in Area 13. View to the west.

Pedestrian survey areas for the HRCM project included accessible areas where ground disturbance may occur. Possible laydown areas outside of the pedestrian survey areas have been desktop reviewed and a field spot check was conducted confirming they are entirely disturbed/developed. These laydown areas outside of the pedestrian survey areas would be used for equipment storage, materials storage, parking, and other temporary activities in support of the HRCM Project construction. No ground disturbance would occur at these sites. They are currently paved or compacted dirt and gravel, and used for miscellaneous purposes, including temporary storage of materials or equipment. Once a determination has been made as to which laydown sites would be used, applicable surveys would be conducted, if necessary.

Figure 4. Saugus Formation outcrop exposed in area 5. View to the east.

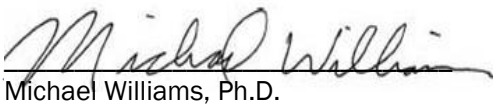
Findings and Recommendations

No paleontological resources were identified within the project site as a result of the institutional records search and desktop geological and paleontological review. The LACM recommended a full paleontological assessment of the project site which this study satisfies. Given the presence of the Saugus Formation mapped within the project site and the vertebrate fossils recovered from the formation in the vicinity of the project site, intact paleontological resources may be encountered during project excavations. In the event that intact paleontological resources are located on the project site, ground-disturbing activities associated with construction of the project, such as grading during site preparation and trenching for utilities, have the potential to destroy a unique paleontological resource or site that has not been previously recorded. The potential damage to paleontological resources would be a potentially significant impact pursuant to CEQA. However, implementation of project design feature (PDF) **PDF-GEO-1** would ensure that potential impacts to paleontological resources during construction activities are reduced to below a level of significance. Impacts would therefore be **less than significant with incorporation of PDF-GEO-1**.

PDF GEO-1: Paleontological Monitoring. Prior to commencement of any grading activity onsite, SoCalGas would retain a qualified paleontologist per the Society of Vertebrate Paleontology (SVP) (2010) guidelines. A qualified paleontological monitor shall be onsite during initial rough grading and other significant ground-disturbing activities in previously undisturbed, early Pleistocene Saugus Formation and below a depth of 5 feet below the ground surface in areas underlain by Holocene alluvium. In accordance with Society of Vertebrate Paleontology guidelines, paleontological monitoring can be reduced or terminated at the discretion of the qualified paleontologist.

If you have any questions regarding this memo, please feel free to contact me 225.892.7622 or mwilliams@dudek.com).

Sincerely,



Michael Williams, Ph.D.
Senior Paleontologist

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Confidential Attachment A

Paleontological Records Search Results Letter

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