PALEONTOLOGICAL RESOURCES ASSESSMENT REPORT

HAVEN VINEYARDS PROJECT

Rancho California Area, Riverside County, California

Assessor's Parcel No. 927-670-009
Plot Plan No. 220029

For Submittal to:

Riverside County Planning Department
County Administrative Center
4080 Lemon Street
Riverside, CA 92502

Prepared for:

Hamel Contracting, Inc.
26431 Jefferson Avenue, Suite A
Murrieta, CA 92562

Prepared by:

Michael Hogan, Principal Investigator
Ron Schmidtling, Principal Paleontologist
Deirdre Encarnación, Report Writer
CRM TECH
1016 East Cooley Drive, Suite A/B
Colton, CA 92324

August 29, 2022

Approximately 10.2 acres
USGS Bachelor Mountain, Calif., 7.5' (1:24,000) quadrangle
Rancho Pauba land grant, T7S R1W, San Bernardino Baseline and Meridian
CRM TECH Contract No. 3881P

EXECUTIVE SUMMARY

Between May and August 2022, at the request of Hamel Contracting, Inc., CRM TECH performed a paleontological resource assessment on an approximately 10.2-acre parcel of vineyard property in the unincorporated Rancho California area of Riverside County, California. The subject property of the study, Assessor's Parcel Numbers 927-670-009, is located on the southern side of Camino Del Vino and to the west of De Portola Road, in a portion of the Rancho Pauba land grant lying within Township 7 South Range 1 West, San Bernardino Baseline and Meridian.

The study is part of the environmental review process for the proposed development of a Class II winery with tasting rooms, office, conference rooms, delicatessen, and production facility. The County of Riverside, as the lead agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA). The purpose of the study is to provide the County with the necessary information and analysis to determine whether the proposed project would adversely affect any significant, nonrenewable paleontological resources, as required by CEQA, and to design a paleontological mitigation program, if necessary.

In order to identify any paleontological resource localities that may exist in or near the project area and to assess the probability for such resources to be encountered during the project, CRM TECH initiated a records search at the appropriate repository, conducted a literature review, and carried out a systematic field survey of the project area. The results of these research procedures suggest that the proposed project's potential to impact significant, nonrenewable paleontological resources is relatively high in the native alluvium, sandstone, and conglomerate sediments present throughout the project area.

Based on these findings, CRM TECH recommends that a paleontological resource impact mitigation program be developed and implemented during the project to prevent impacts on significant, nonrenewable paleontological resources or reduce them to a level less than significant. As the primary component of the mitigation program, all earth-moving operations reaching beyond the previously disturbed surface soil should be monitored by a qualified paleontological monitor to ensure the timely identification of the undisturbed, potentially fossiliferous sediments when they are encountered. Under these conditions, the proposed project may be cleared to proceed in compliance with CEQA provisions on paleontological resources.

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INTRODUCTION

Between May and August 2022, at the request of Hamel Contracting, Inc., CRM TECH performed a paleontological resource assessment on an approximately 10.2-acre parcel of vineyard property in the unincorporated Rancho California area of Riverside County, California (Fig. 1). The subject property of the study, Assessor's Parcel Numbers 927-670-009, is located on the southern side of Camino Del Vino and to the west of De Portola Road, in a portion of the Rancho Pauba land grant lying within Township 7 South Range 1 West, San Bernardino Baseline and Meridian (Figs. 2, 3).

The study is part of the environmental review process for the proposed development of a Class II winery with tasting rooms, office, conference rooms, delicatessen, and production facility. The County of Riverside, as the lead agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA; PRC §21000, et seq.). The purpose of the study is to provide the County with the necessary information and analysis to determine whether the proposed project would adversely affect any significant, nonrenewable paleontological resources, as required by CEQA, and to design a paleontological mitigation program, if necessary.

In order to identify any paleontological resource localities that may exist in or near the project area and to assess the probability for such resources to be encountered during the project, CRM TECH initiated a records search at the appropriate repository, conducted a literature review, and carried out a systematic field survey of the project area. The following report is a complete account of the methods, results, and final conclusion of this study. Personnel who participated in the study are named in the appropriate sections below, and their qualifications are provided in Appendix 1.

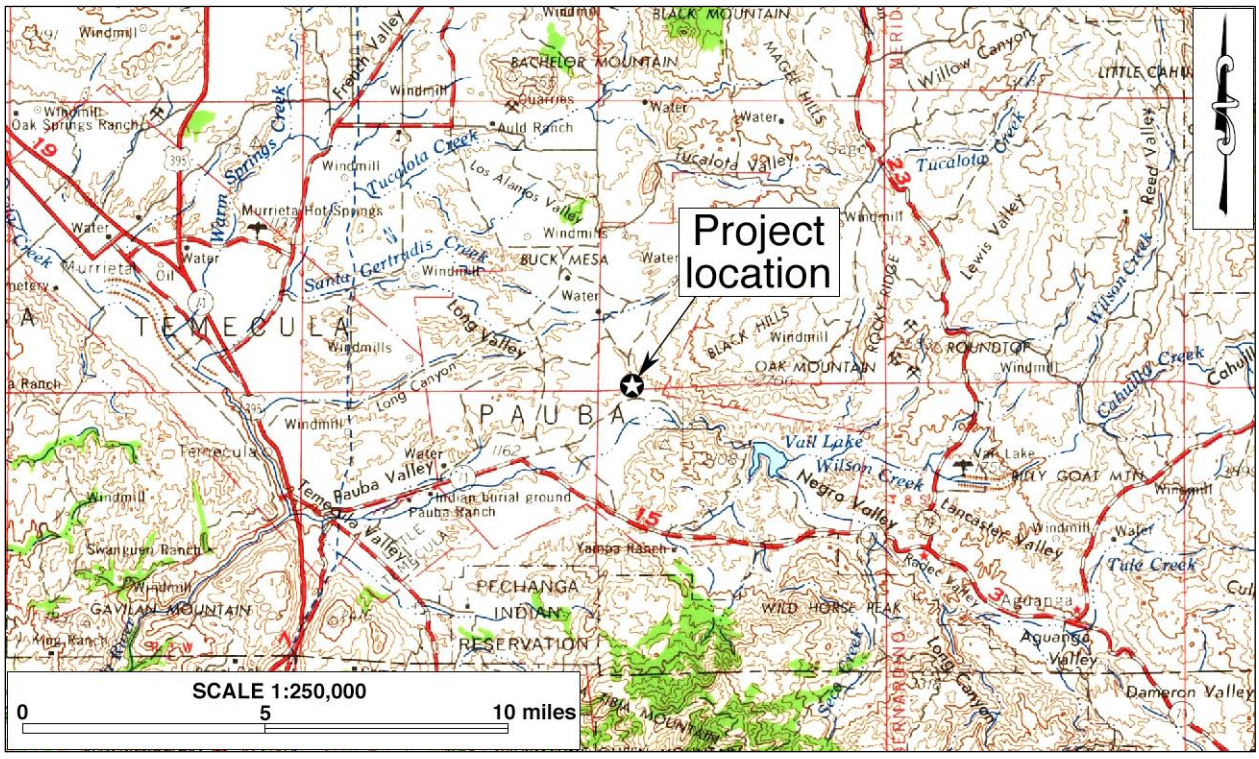

Figure 1. Project vicinity. (Based on USGS Santa Ana, Calif., 120'x60' quadrangle, 1979 edition)

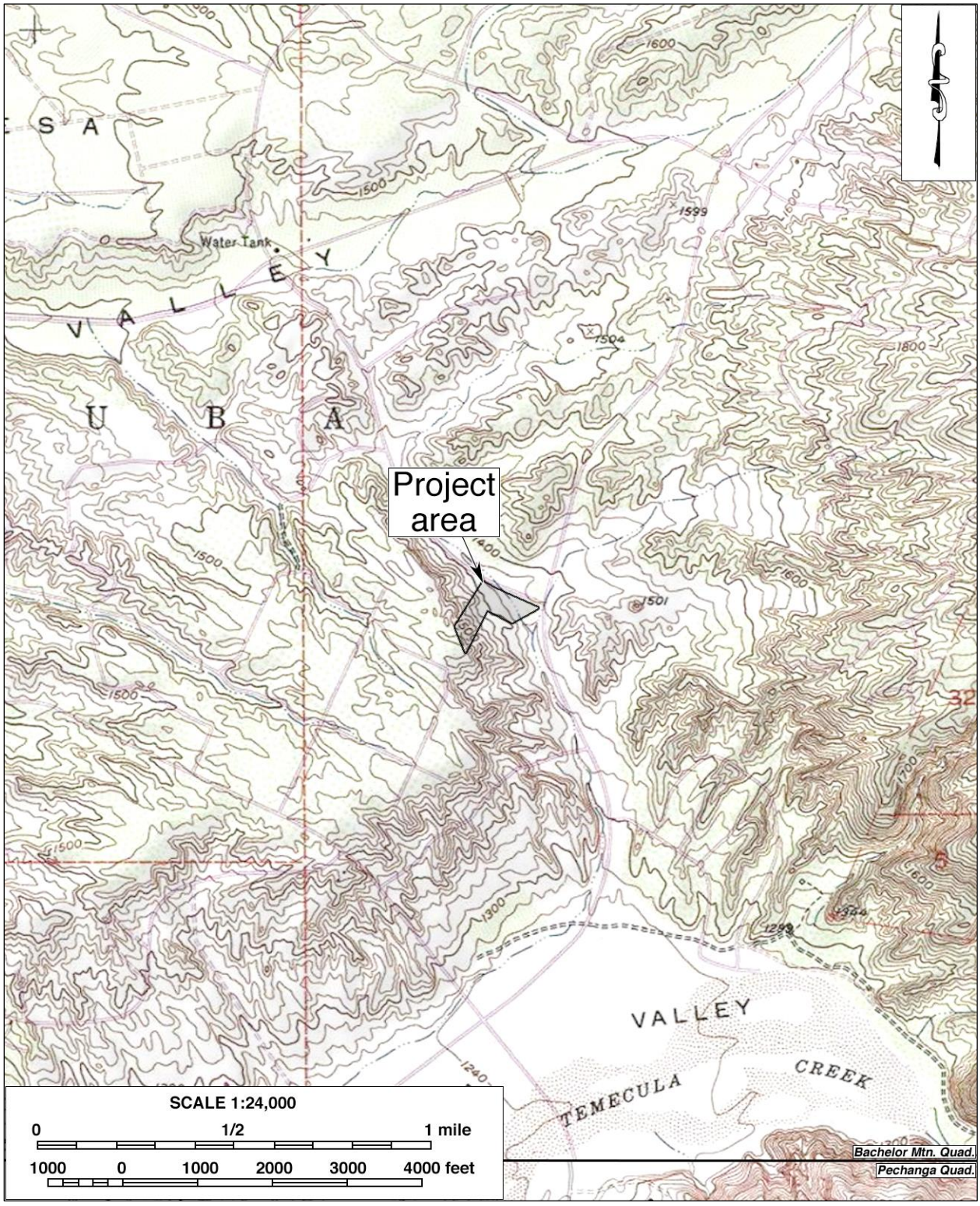

Figure 2. Project location. (Based on USGS Bachelor Mountain and Pechanga, Calif., 7.5' quadrangles, 1978/1988 edition)

Figure 3. Recent satellite image of the project area.

PALEONTOLOGICAL RESOURCES

DEFINITION

Paleontological resources represent the remains of prehistoric life, exclusive of any human remains, and include the localities where fossils were collected as well as the sedimentary rock formations in which they were found. The defining character of fossils or fossil deposits is their geologic age, typically older than recorded human history and/or older than the middle Holocene Epoch, which dates to circa 5,000 radiocarbon years (Society of Vertebrate Paleontology 2010:11).

Common fossil remains include marine and freshwater mollusk shells; the bones and teeth of fish, amphibians, reptiles, and mammals; leaf imprint assemblages; and petrified wood. Fossil traces, another type of paleontological resource, include internal and external molds (impressions) and casts created by these organisms. These items can serve as important guides to the age of the rocks and sediments in which they are contained, and may prove useful in determining the temporal relationships between rock deposits from one area and those from another as well as the timing of geologic events. They can also provide information regarding evolutionary relationships, development trends, and environmental conditions.

Fossil resources generally occur only in areas of sedimentary rock (e.g., sandstone, siltstone, mudstone, claystone, or shale). Because of the infrequency of fossil preservation, fossils, particularly vertebrate fossils, are considered nonrenewable paleontological resources. Occasionally fossils may be exposed at the surface through the process of natural erosion or because of human disturbances; however, they generally lay buried beneath the surficial soils. Thus, the absence of fossils on the surface does not preclude the possibility of their being present within subsurface deposits, while the presence of fossils at the surface is often a good indication that more remains may be found in the subsurface.

SIGNIFICANCE CRITERIA

According to guidelines proposed by Eric Scott and Kathleen Springer (2003:6) of the San Bernardino County Museum, paleontological resources can be considered to be of significant scientific interest if they meet one or more of the following criteria:

1. The fossils provide information on the evolutionary relationships and developmental trends exhibited among organisms, living or extinct;
2. The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein;
3. The fossils provide data regarding the development of biological communities or the interactions between paleobotanical and paleozoological biotas;
4. The fossils demonstrate unusual or spectacular circumstances in the history of life; and/or
5. The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.

PALEONTOLOGICAL SENSITIVITY

The fossil record is unpredictable, and the preservation of organic remains is rare, requiring a particular sequence of events involving physical and biological factors. Skeletal tissue with a high percentage of mineral matter is the most readily preserved within the fossil record; soft tissues not intimately connected with the skeletal parts, however, are the least likely to be preserved (Raup and Stanley 1978). For this reason, the fossil record contains a biased selection not only of the types of organisms preserved but also of certain parts of the organisms themselves. As a consequence, paleontologists are unable to know with certainty, the quantity of fossils or the quality of their preservation that might be present within any given geologic unit.

Sedimentary units that are paleontologically sensitive are those geologic units (mappable rock formations) with a high potential to contain significant nonrenewable paleontological resources. More specifically, these are geologic units within which vertebrate fossils or significant invertebrate fossils have been determined by previous studies to be present or are likely to be present. These units include, but are not limited to, sedimentary formations that contain significant paleontological resources anywhere within their geographical extent as well as sedimentary rock units temporally or lithologically amenable to the preservation of fossils.

A geologic formation is defined as a stratigraphic unit identified by its lithic characteristics (e.g., grain size, texture, color, and mineral content) and stratigraphic position. There is a direct relationship between fossils and the geologic formations within which they are enclosed and, with sufficient knowledge of the geology and stratigraphy of a particular area, it is possible for paleontologists to reasonably determine the formation's potential to contain significant nonrenewable vertebrate, invertebrate, marine, or plant fossil remains.

The paleontological sensitivity for a geologic formation is determined by the potential for that formation to produce significant nonrenewable fossils. This determination is based on what fossil resources the particular geologic formation has produced in the past at other nearby locations. Determinations of paleontologic sensitivity must consider not only the potential for yielding vertebrate fossils but also the potential of yielding a few significant fossils that may provide new and significant taxonomic, phylogenetic, and/or stratigraphic data.

The Society of Vertebrate Paleontology issued a set of standard guidelines intended to assist paleontologists to assess and mitigate any adverse effects/impacts to nonrenewable paleontological resources. The guidelines defined four categories of paleontological sensitivity for geologic units that might be impacted by a proposed project, as listed below (Society of Vertebrate Paleontology 2010:1-2):

- **High Potential**: Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered.
- **Undetermined Potential**: Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment.
- **Low Potential**: Rock units that are poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances.
- **No Potential**: Rock units that have no potential to contain significant paleontological resources, such as high-grade metamorphic rocks and plutonic igneous rocks.

SETTING

The project area is located in the northern portion of the Peninsular Ranges geomorphic province, near where it adjoins the Transverse Ranges province (Jenkins 1980:40-41; Harms 1996:131). The Peninsular Ranges province is bounded by the Transverse Ranges province on the north, the Colorado Desert Province on the northeast, and the Pacific Ocean on the west (*ibid.*). It extends southward to the southern tip of Baja California (Jahns 1954:Plate 3; Harden 2004:465).

The Peninsular Ranges Province is made up of a series of northwest-southeast trending structural blocks consisting of uplifted mountains that are separated by valley basins that have developed along the intervening fault zones. The mountains are made up mainly of igneous intrusive rocks, metasedimentary rocks, and some metavolcanic rocks (Harden 2004:466-468). The non-crystalline rocks in the western portion of the mountains consist of both metavolcanic and metasedimentary rocks that are mainly of Mesozoic age, while the eastern portion contains mainly metasedimentary rocks of Paleozoic and older age (*ibid.*:471-472). The crystalline basement rocks are present in both the western and the eastern portions and consist mainly of Mesozoic-age granitic rocks with some scattered gabbroic intrusions (*ibid.*:466-468).

The project area lies in the eastern portion of the Elsinore Trough (Mann 1955:Plate 1), a structurally depressed region filled with sediments of upper Pliocene through Recent age (Kennedy 1977:5). The Elsinore Trough is one of the many tectonically controlled valleys in the valley-and-ridge systems to be found within the Perris Block, which is situated between the San Jacinto and Elsinore-Chino fault zones (English 1926). The Perris Block is bounded on the north by the Cucamonga (San Gabriel) Fault and on the south by a vaguely delineated boundary near the southern end of the Temecula Valley (*ibid.*). This structural block is considered to have been active since Pliocene time (Woodford et al. 1971:3421). Colluvial/alluvial sediments of varying thickness derived from the erosion of the elevated portions of the region fill the low-lying areas of the Perris Block and the Elsinore Trough.

More specifically, the project area is situated between the Long Valley and the Pauba Valley, both of which are considered easterly offshoots of the larger Temecula Valley. The topography of the area is dominated by rolling hills and wide, flat mesas, including an unnamed mesa overlooking De Portola Road and Camino Del Vino. The project area lies on the eastern slope of this mesa. The climate in the Temecula Valley region is relatively temperate, with the average high temperatures in summer reaching into the 90s (Fahrenheit) and the average lows in winter hovering around the 40s. The annual precipitation averages approximately 11.4 inches, most of which occurs between November and March. Because of the favorable climate and hilly terrain, the Rancho California "wine country" is best known today for grape cultivation and winemaking.

The overall setting of the project location is generally rural in character, as it is surrounded by large residential properties, boutique wineries, vineyards, and scattered tracts of undeveloped land (Fig. 3). Most of the project area is occupied by the existing vineyard with its supporting infrastructure, such as roads, irrigation system, and hillside water diversion features, where the ground surface has been extensively disturbed. The western portion of the property rises steeply up the slope and retains much more of the native landscape (Fig. 4). Elevations in the project area range approximately from 1,375 feet to 1,555 feet above mean sea level. Other than the grapevines,

Figure 4. Overview of the current natural setting of the project area. (Photograph taken on June 3, 2022; view to the northeast)

vegetation in the project area consists mostly of creosote bushes and other small grasses and brush, such as buckwheat and sagebrush, especially on the hillside (Fig. 4).

METHODS AND PROCEDURES

RECORDS SEARCHES

The paleontological records search service for this study was provided by the Western Science Center (WSC) in Hemet. The WSC maintains files of regional paleontological localities as well as supporting maps and documents. The records search results were used to identify previously performed paleontological resource assessments and known paleontological localities within a one-mile radius of the project area. A copy of the records search results is attached to this report in Appendix 2.

LITERATURE REVIEW

In conjunction with the records search, CRM TECH report writer Deirdre Encarnación reviewed geological literature pertaining to the project vicinity under the direction of principal paleontologist

Ron Schmidtling. Sources consulted during the review include primarily topographic, geologic, and soil maps of the Rancho California area, the Riverside County GIS database on paleontological sensitivity, satellite and aerial images available at the Nationwide Environmental Title Research (NETR) Online website and through the Google Earth software, and other materials in the CRM TECH library, including unpublished reports produced during similar surveys in the vicinity.

FIELD SURVEY

On June 3, 2022, CRM TECH paleontological surveyors Daniel Ballester and Hunter O'Donnell carried out the field survey of the project area under Ron Schmidtling's direction. In the open areas, the survey was completed by walking a series of parallel north-south transects spaced 15 meters (approximately 50 feet) apart. In the existing vineyard, the survey transects were oriented along the grapevine rows. In this way, the ground surface in the entire project area was systematically examined to determine soil types, verify the geological formations, and search for indications of paleontological remains. Ground visibility was good (90%) in the vineyard and fair (50%) on the vegetation-covered hillside.

RESULTS AND FINDINGS

RECORDS SEARCHES

According to the WSC, the project area consists primarily of Pauba Formation sediments, which sit on top of Pliocene-Pleistocene-aged sandstone and conglomerate unconformity (Stoneburg 2022; see App. 2). Pliocene-Pleistocene sandstone is considered "highly paleontologically sensitive," having yielded vertebrate fauna ranging in age from the Late Blancan Stage to the Irvingtonian Stage (*ibid*.). No fossil localities were reported by WSC within the project area or within a one-mile radius, but a fossil locality was noted approximately 2.5 miles northwest of the project location (*ibid*.). Based on these results, WSC concluded that any fossil specimen recovered in the project area would be scientifically significant and recommended that a paleontological resource mitigation program be implemented to salvage and curate such specimens (*ibid*.).

LITERATURE REVIEW

Morton and Kennedy (2003) identified two different formations within the project boundaries, namely *Qpfs* and Qya_a (Fig. 5). *Qpfs* covers most of the project area and represents Pleistocene-age Pauba Formation sediments, mainly siltstone, sandstone, and conglomerate known to produce vertebrate fauna of late Irvingtonian and early Rancholabrean ages (Morton and Kennedy 2003). Within the Bachelor Mountain quadrangle, *Qpfs* appears to include also a sandstone member defined as brown, moderately well-indurated, cross-bedded sandstone containing sparse cobble- to boulder-conglomerate beds, as well as sandstone and conglomerate of Wildomar area (Pleistocene and Pliocene in age), unconformably overlain by Pauba Formation (*ibid*.). Qya_a occurs only in the eastern tip of the project area (Fig. 5). It consists of young alluvial channel deposits, specifically as fluvial deposits along canyon floors; containing unconsolidated, very coarse to very fine sand, silt, and clay-bearing alluvium (*ibid*.).

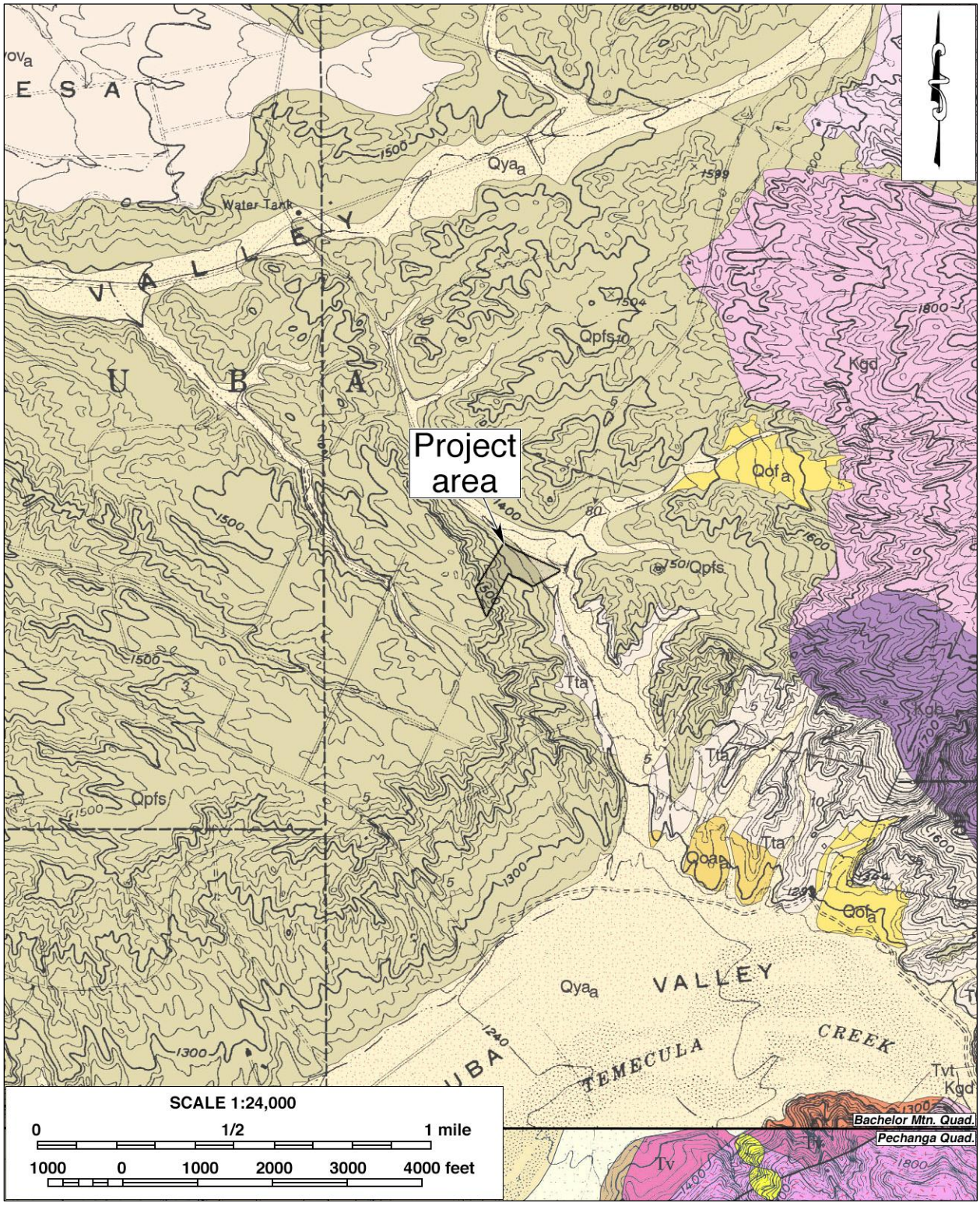

Figure 5. Geological map of the project vicinity. (Source: Morton and Kennedy 2003)

The surface geology in the project area was mapped by Rogers (1965) as mainly nonmarine sediments of Pleistocene age (*Qc*), with some alluvium (*Qal*). Riverside County paleontological sensitivity map classifies the project location as High Sensitivity ("High A"; RCIT n.d.). According to the County's general plan,

> High A is based on geologic formations or mapped rock units that are known to contain or have the correct age and depositional conditions to contain significant paleontological resources. These include rocks of Silurian or Devonian age and younger that have potential to contain remains of fossil fish, and Mesozoic and Cenozoic rocks that contain fossilized body elements and trace fossils such as tracks, nests and eggs. (County of Riverside 2015:4.9-11).

Aerial and satellite images reveal that the project area remained in a relatively natural state until recent decades. Portions of the project area were cleared of the native vegetation in the early years of the current century, and the vineyard in existence today was developed in 2006 (Google Earth 1996-2006).

FIELD SURVEY

Throughout the course of the field survey, no surface manifestation of any paleontological remains was found within the project area, although potentially paleontologically sensitive soils were observed. The existing surface soils, consisting of a brown loamy topsoil underlain by brown, moderately well-indurated, cross-bedded sandstone containing sparse cobble- to boulder-conglomerate beds, match the description of the soil mapping.

DISCUSSION

The results of the records search and the literature review suggest that the project area is situated upon Pauba Formation sediments, which in general have a high potential to contain significant, nonrenewable fossil remains. These soils are underlain by sandstone and conglomerate dating to the Pliocene-Pleistocene, also highly fossiliferous. These soils have yielded significant fossils elsewhere in the project vicinity. While no fossil localities were identified within the project area, WSC reported fossil discoveries within 2.5 miles of this location. In summary, excavations into the native soils in the project vicinity have a strong potential to encounter paleontological resources despite the lack of surface findings.

CONCLUSION AND RECOMMENDATIONS

CEQA guidelines (Title 14 CCR App. G, Sec. V(c)) require that public agencies in the State of California determine whether a proposed project would "directly or indirectly destroy a unique paleontological resource" during the environmental review process. The present study, conducted in compliance with this provision, is designed to identify any significant, non-renewable paleontological resources that may exist within or adjacent to the project area, and to assess the possibility for such resources to be encountered in future excavation and construction activities.

Based on the research results presented above, the proposed project's potential to impact significant, nonrenewable paleontological resources appears to be high in the native alluvium, sandstone, and conglomerate sediments present throughout the project area. Therefore, CRM TECH recommends that a paleontological resource impact mitigation program be developed and implemented during the project to prevent impacts on significant, nonrenewable paleontological resources or reduce them to a level less than significant. The mitigation program should be developed in accordance with the provisions of CEQA (Scott and Springer 2003) as well as the proposed guidelines of the Society of Vertebrate Paleontology (2010), and should include but not be limited to the following components:

- All earth-moving operations reaching beyond the previously disturbed surface soil should be monitored by a qualified paleontological monitor to ensure the timely identification of the undisturbed, potentially fossiliferous sediments when they are encountered. The monitor should be prepared to quickly salvage fossil remains upon discovery to avoid construction delays, but must have the power to temporarily halt or divert construction equipment to allow for removal of abundant or large specimens.
- Collected samples of sediment should be processed to recover small fossils, and all recovered specimens should be identified and curated at a repository with permanent retrievable storage.
- A report of findings, including an itemized inventory of recovered specimens, should be prepared upon completion of the procedures outlined above. The report should include a discussion of the significance of the paleontological findings, if any. The report and the inventory, when submitted to the County of Riverside, would signify completion of the program to mitigate potential impacts on paleontological resources.

Under these conditions, the proposed project may be cleared to proceed in compliance with CEQA provisions on paleontological resources.

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APPENDIX 1:
PERSONNEL QUALIFICATIONS

PROJECT PALEONTOLOGIST
Ron Schmidtling, M.S.

Education

1995	M.S., Geology, University of California, Los Angeles.
1991	Pasadena City College, Pasadena, California.
1985	B.A., Archaeology, Paleontology, Ancient Folklore, and Art History, University of Southern Mississippi, Hattiesburg.

Professional Experience:

2020-	Project Paleontologist, CRM TECH, Colton, California.
2014-	Instructor of Earth Science, History of Life, Ecology, and Evolutionary Biology, Columbia College Hollywood, Reseda, California.
2013, 2015	Volunteer, excavation of a camarasaur and a diplodocid in southern Utah, Natural History Museum of Los Angeles County, California.
1993-2014	Consultant, Getty Conservation Institute, Brentwood, California. • Geological Consultant on the Renaissance Bronze Project, characterizing constituents of bronze core material; • Paleontological Consultant for Antiquities/Conservation, identifying the foraminifera and mineral constituents of a limestone torso of Aphrodite; • Scientific Consultant on the Brentwood Site Building Project, testing building materials for their suitability in the museum galleries.
1999-2001	Archaeological and Paleontological Monitor, Michael Brandman Associates, Irvine, California.
1997	Department of Archaeology, University of California, Los Angeles.
1994	Scientific Illustrator and Teaching Assistant, Department of Earth and Space Sciences and Department of Biological Sciences, University of California, Los Angeles.

Memberships

AAPS (Association of Applied Paleontological Sciences), USA; CSEOL (Center for the Study of Evolution and the Origin of Life), Department of Earth Sciences, University of California, Los Angeles.

Publications and Reports

Author, co-author, and contributor on numerous paleontological publications and paleontological resource management reports.

REPORT WRITER
Deirdre Encarnación, M.A.

Education

2003	M.A., Anthropology, San Diego State University, California.
2000	B.A., Anthropology, minor in Biology, with honors; San Diego State University, California.

Professional Experience

2004-	Project Archaeologist/Report Writer, CRM TECH, Riverside/Colton, California.
2001-2003	Part-time Lecturer, San Diego State University, California.
2001	Research Assistant for Dr. Lynn Gamble, San Diego State University.
2001	Archaeological Collection Catalog, SDSU Foundation.

PALEONTOLOGICAL SURVEYOR
Hunter C. O'Donnell, B.A.

Education

2016-	M.A. Program, Applied Archaeology, California State University, San Bernardino.
2015	B.A. (*cum laude*), Anthropology, California State University, San Bernardino.
2012	A.A., Social and Behavioral Sciences, Mt. San Antonio College, Walnut, California.
2011	A.A., Natural Sciences and Mathematics, Mt. San Antonio College, Walnut, California.

Professional Experience

2017-	Project Archaeologist, CRM TECH, Colton, California.
2016-2018	Graduate Research Assistant, Applied Archaeology, California State University, San Bernardino.
2016-2017	Cultural Intern, Cultural Department, Pechanga Band of Luiseño Indians, Temecula, California.
2015	Archaeological Intern, U.S. Bureau of Land Management, Barstow, California.
2015	Peer Research Consultant: African Archaeology, California State University, San Bernardino.

PALEONTOLOGICAL SURVEYOR/FIELD DIRECTOR
Daniel Ballester, M.S.

Education

2013	M.S., Geographic Information System (GIS), University of Redlands, California.
1998	B.A., Anthropology, California State University, San Bernardino.
1997	Archaeological Field School, University of Las Vegas and University of California, Riverside.
1994	University of Puerto Rico, Rio Piedras, Puerto Rico.

- Cross-trained in paleontological field procedures and identifications by CRM TECH Geologist/Paleontologist Harry M. Quinn.

Professional Experience

2002-	Field Director/GIS Specialist, CRM TECH, Riverside/Colton, California.
2011-2012	GIS Specialist for Caltrans District 8 Project, Garcia and Associates, San Anselmo, California.
2009-2010	Field Crew Chief, Garcia and Associates, San Anselmo, California.
2009-2010	Field Crew, ECorp, Redlands.
1999-2002	Project Paleontologist/Archaeologist, CRM TECH, Riverside, California.
1998-1999	Field Crew, K.E.A. Environmental, San Diego, California.
1998	Field Crew, A.S.M. Affiliates, Encinitas, California.
1998	Field Crew, Archaeological Research Unit, University of California, Riverside.

Cultural Resources Management Reports

Co-author and contributor to numerous cultural and paleontological resources management reports since 2002.

APPENDIX 2

RECORDS SEARCH RESULTS

WESTERN SCIENCE CENTER

May 12, 2022

CRM Tech
Nina Gallardo
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324

Dear Ms. Gallardo,

This letter presents the results of a record search conducted for the Proposed Haven Vineyard Project in the Community of Rancho California, Riverside County, CA. The project area is located directly west of De Portola Road and south of Camino Del Vino in the Pauba Land grant section of Township 7 South, Range 1 West on the *Bachelor Mountain, CA* USGS 7.5 minute quadrangle.

The geologic unit underlying this project is mapped as a Pliocene-Pleistocene aged sandstone and conglomerate unconformity of the Wildomar area overlain by the Pauba Formation (Morton, Kennedy, Bovard, and Burns, 2003). Pliocene-Pleistocene sandstone units are considered to be highly paleontologically sensitive, and this unit is recorded as yielding vertebrate fauna of late Blancan age in the lower part, and Irvingtonian-aged fauna in the upper part (Reynolds and Reynolds, 1990). The Western Science Center does not have localities within the project area or within a 1 mile radius, but the San Diego Pipeline Project lies approximately 2.5 miles northwest of the project area.

Any fossils recovered from the Proposed Haven Vineyard Project area would be scientifically significant. Excavation activity associated with development of the project area would impact the paleontologically sensitive Pleistocene and Pliocene units and it is the recommendation of the Western Science Center that a paleontological resource mitigation program be put in place to monitor, salvage, and curate any recovered fossils associated with the current study area.

If you have any questions, or would like further information, please feel free to contact me at bstoneburg@westerncentermuseum.org

Sincerely,

Brittney Elizabeth Stoneburg
Collections Technician