

PALEONTOLOGICAL RESOURCES ASSESSMENT REPORT

MAJESTIC FREEWAY BUSINESS CENTER (PHASE 2)

Mead Valley Area
Riverside County, California

For Submittal to:

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

Prepared for:

T&B Planning, Inc.
3200 El Camino Real, Suite 100
Irvine, CA 92602

Prepared by:

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Bai “Tom” Tang, Principal Investigator
Michael Hogan, Principal Investigator

July 11, 2022

Approximately 70 acres
USGS Steele Peak, Calif., 7.5' quadrangle; Sections 1 and 2, T4S R4W, SBBM
Riverside County Planning Case Nos. PPT220003, PPT220008, PPT220009, and PPT220015
CRM TECH Contract No. 3851P

EXECUTIVE SUMMARY

Between February and July 2022, at the request of T&B Planning, Inc., CRM TECH performed a paleontological resource assessment on approximately 70 acres of vacant land near the unincorporated Mead Valley area of Riverside County, California. The subject property of the study consists of four non-contiguous parcels located on both sides of Harvill Avenue between Oleander Avenue and Martin Street, within Sections 1 and 2 of Township 4 South Range 4 West, San Bernardino Baseline and Meridian, as depicted in the U.S. Geological Survey Steele Peak, Calif., 7.5' quadrangle.

The study is part of the environmental review process for Phase 2 of the proposed Majestic Freeway Business Center Project, which entails primarily the construction of four warehouse buildings designated Buildings 13, 14, 17, and 18 in the project plan. 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 paleontological records search, 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 appears to be high in the Pleistocene-age alluvial fan units occurring subsurface throughout the project area.

Based on this assessment, 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 a part of the mitigation program, all earth-moving operations Pleistocene-age beyond the depth of two feet should be monitored for potential 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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INTRODUCTION

Between February and July 2022, at the request of T&B Planning, Inc., CRM TECH performed a paleontological resource assessment on approximately 70 acres of vacant land near the unincorporated Mead Valley area of Riverside County, California (Fig. 1). The subject property of the study consists of four non-contiguous parcels located on both sides of Harvill Avenue between Oleander Avenue and Martin Street, within Sections 1 and 2 of Township 4 South Range 4 West, San Bernardino Baseline and Meridian, as depicted in the U.S. Geological Survey (USGS) Steele Peak, California, 7.5' quadrangle (Figs. 2, 3).

The study is part of the environmental review process for Phase 2 of the proposed Majestic Freeway Business Center Project, which entails primarily the construction of four warehouse buildings designated Buildings 13, 14, 17, and 18 in the project plan. 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 paleontological records search, 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.

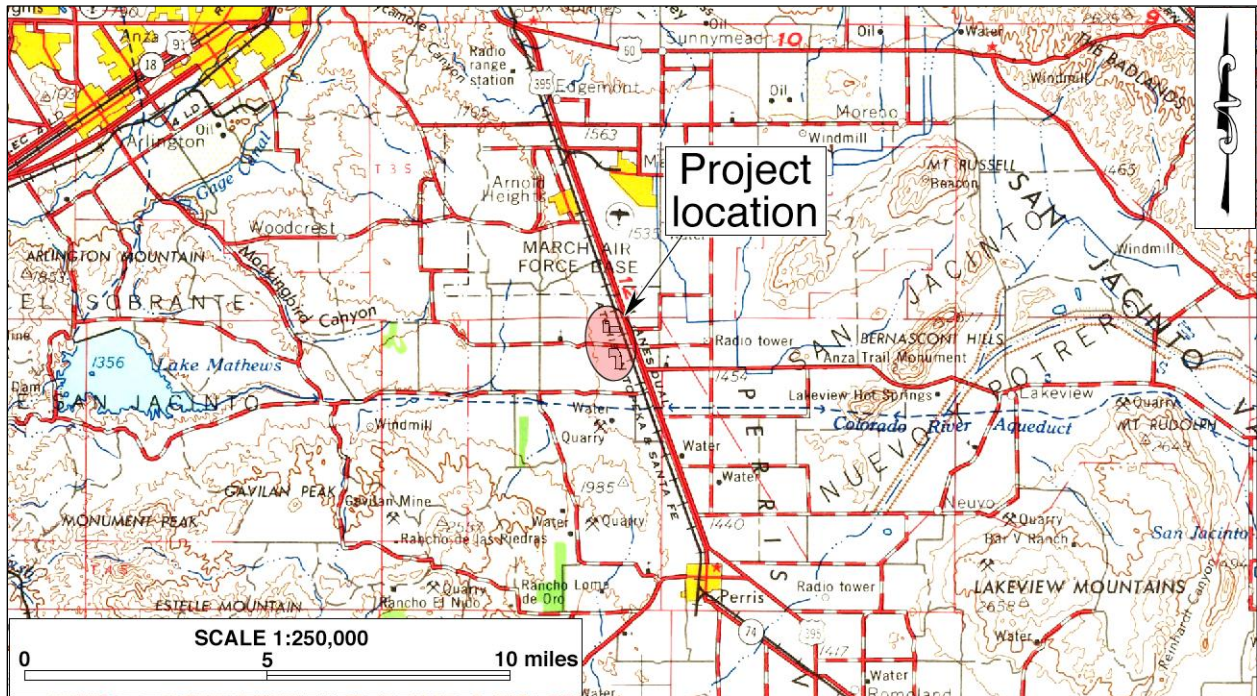


Figure 1. Project vicinity. (Based on USGS Santa Ana, Calif., 120'x60' quadrangle, 1979 edition)

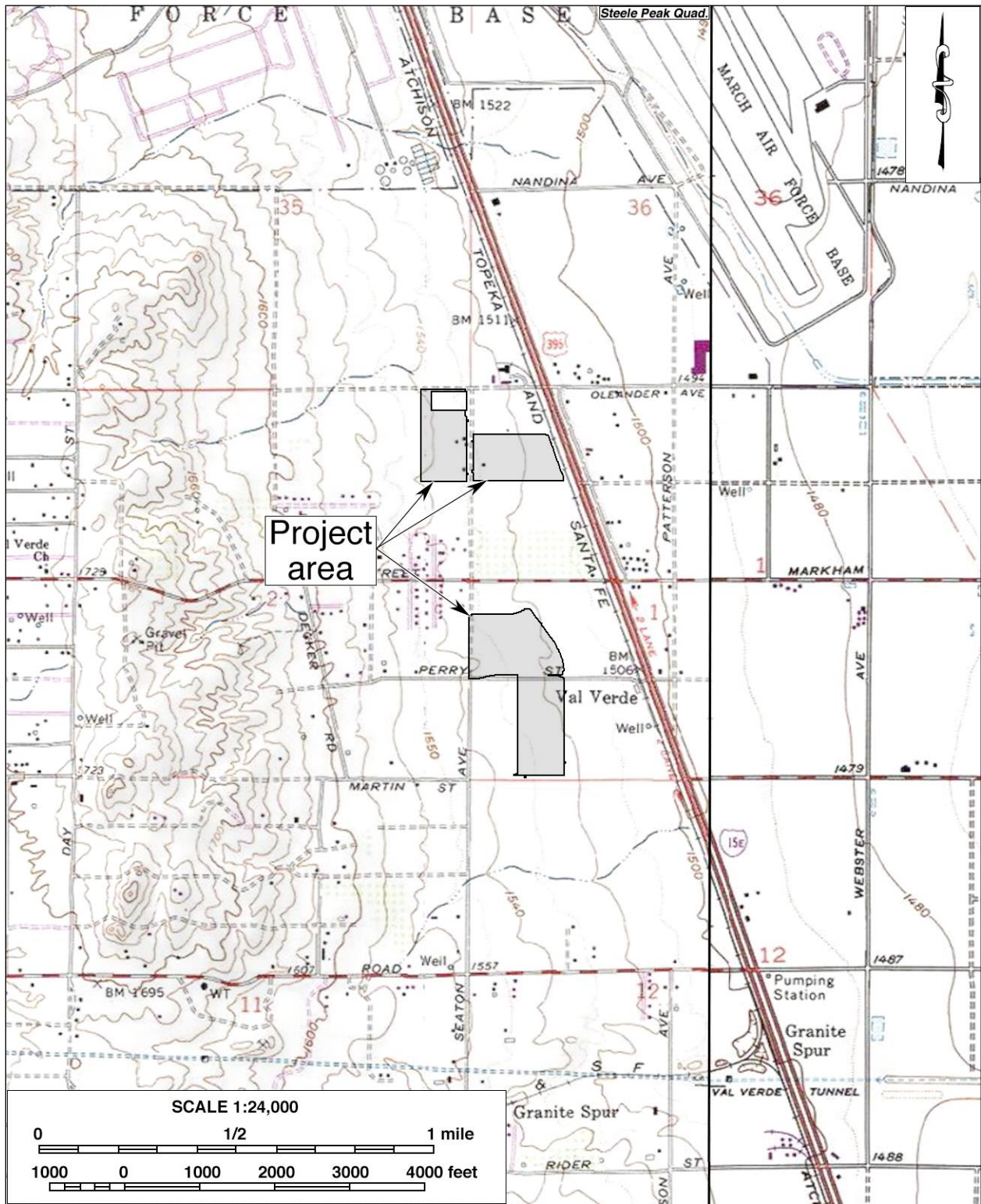


Figure 2. Project location. (Based on USGS Steele Peak and Perris, Calif., 7.5' quadrangles, 1978/1979 edition)



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 to yield a large collection of fossil remains but also the potential to yield a few fossils that can 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 Mead Valley area is situated on the northwestern edge of the Perris Valley, a semi-arid inland alluvial valley in western Riverside County that extends generally in a northwest-southeast direction. A number of isolated granitic mountains, such as the Lakeview Mountains and the Bernasconi Hills, separate the Perris Valley from the nearby Moreno, San Jacinto, and Meniffee Valleys. These valleys are sub-basins of the San Jacinto watershed, one of the three major geographical subdivisions of the Santa Ana Basin. This valley complex is bounded on the northeast by the San Jacinto Mountains and on the southwest by the Santa Ana Mountains. The climate and environment of the region are typical of southern California's inland valleys, with temperatures reaching over 100 degrees Fahrenheit in summer and dipping to near freezing in winter. The average annual precipitation is approximately 12 inches, most of which occurs between December and March.

Geologically, the Perris Valley lies in the northern portion of the Peninsular Ranges geomorphic province, close to the boundary with the adjacent Transverse Ranges province (Jenkins 1980:40-41; Harms 1996:131). 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 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 eastern portion of the mountains contain mainly metasedimentary rocks of Paleozoic and older age, while the crystalline basement rocks consist mainly of Mesozoic-age granitic rocks with some scattered gabbroic intrusions (*ibid.*:466-468, 471-472).

The Perris Valley is a part of the Perris Block, one of the structural blocks in the Peninsular Ranges province. Situated between the San Jacinto and Elsinore-Chino fault zones, the Perris Block includes many tectonically controlled valley-and-ridge systems (English 1926). It 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 has 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.

More specifically, the project area is located on an expansive tract of former agricultural land along the west side of the Burlington Northern Santa Fe Railway and Interstate Highway 215 that has been undergoing a gradual transformation to commercial/industrial use in recent decades. All four parcels of the project area are currently undeveloped, but portions of the land were once occupied by buildings, as demonstrated by maps and aerial/satellite photographs from the historic era and foundations remaining extant today. Elevations in the project area range approximately from 1,515 feet to 1,550 feet above mean sea level, and the terrain is generally level with a gradual incline to the southwest.

The ground surface in the project vicinity has been extensively disturbed in the past by agricultural operations, construction and demolition of buildings, and earth-moving activities associated with road construction and nearby development. The existing vegetation is indicative of past land use and features eucalyptus trees, various landscaping plants, and introduced weeds such as wild mustard, foxtail, tumbleweed, and other small grasses and brush (Fig. 4). The surface soil is made up of loamy sands of fine to medium-sized grain mixed with gravels featuring fine-to-coarse pebbles and small cobbles.



Figure 4. Typical landscape in the project area. (View to the southwest; photograph taken on April 19, 2022)

METHODS AND PROCEDURES

RECORDS SEARCH

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 location. 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 Schmidting. Sources consulted during the review include primarily published literature on regional geology, topographic, geologic, and soil maps of the Mead Valley area, the Riverside County GIS database on paleontological sensitivity, satellite and aerial images available at the

Nationwide Environmental Title Research (NETR) Online website, and other materials in the CRM TECH library, including unpublished reports produced during similar surveys in the vicinity.

FIELD SURVEY

On April 19, 2022, CRM TECH field director/paleontological surveyor Daniel Ballester carried out the field survey of the project area under Ron Schmidting's direction. The survey was completed by walking a series of parallel north-south and east-west transects spaced 15 meters (approximately 50 feet) apart. In this way, the ground surface in the entire project area was systematically and carefully examined to determine soil types, verify the geological formations, and search for indications of paleontological remains. Ground visibility was fair (70%) over most of the project area but was poor (0-10%) where pockets of dense vegetation were present.

RESULTS AND FINDINGS

RECORDS SEARCH

According to the WSC, the project area consists primarily of alluvial sand and gravel dating to the Holocene and Pleistocene Epochs (Stoneburg 2022; see App. 2). The WSC did not identify any known paleontological localities within the project area or within a one-mile radius, but noted that Pleistocene alluvial fan units are considered to be of high paleontological sensitivity (*ibid.*). Therefore, the WSC concluded that any fossil specimen recovered from the project area would be scientifically significant and recommended that a paleontological resource mitigation program be implemented to monitor ground-disturbing activities and salvage such specimens, if discovered (*ibid.*).

LITERATURE REVIEW

The surface geology in the project area is mapped by Morton (2001; 2004) as *Qvof_a* (Fig. 5), namely "very old fan deposits (early Pleistocene)," which is described as mostly well-dissected, well-indurated, reddish-brown sand deposits. Similarly, Rogers (1965) identifies the surface sediments in the project area as *Qal*, namely Holocene alluvium.

According to the County's general plan regarding paleontological sensitivity,

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).

The Riverside County paleontological sensitivity map classifies the project location as High Sensitivity ("High B"; RCIT n.d.). This assessment indicates that the geologic formations or rock units at this location are known to contain or have the correct age and depositional conditions to contain significant paleontological resources, but that the fossil remains are likely to be encountered at or below four feet of depth (County of Riverside 2015:4.9-11). Aerial and satellite images show

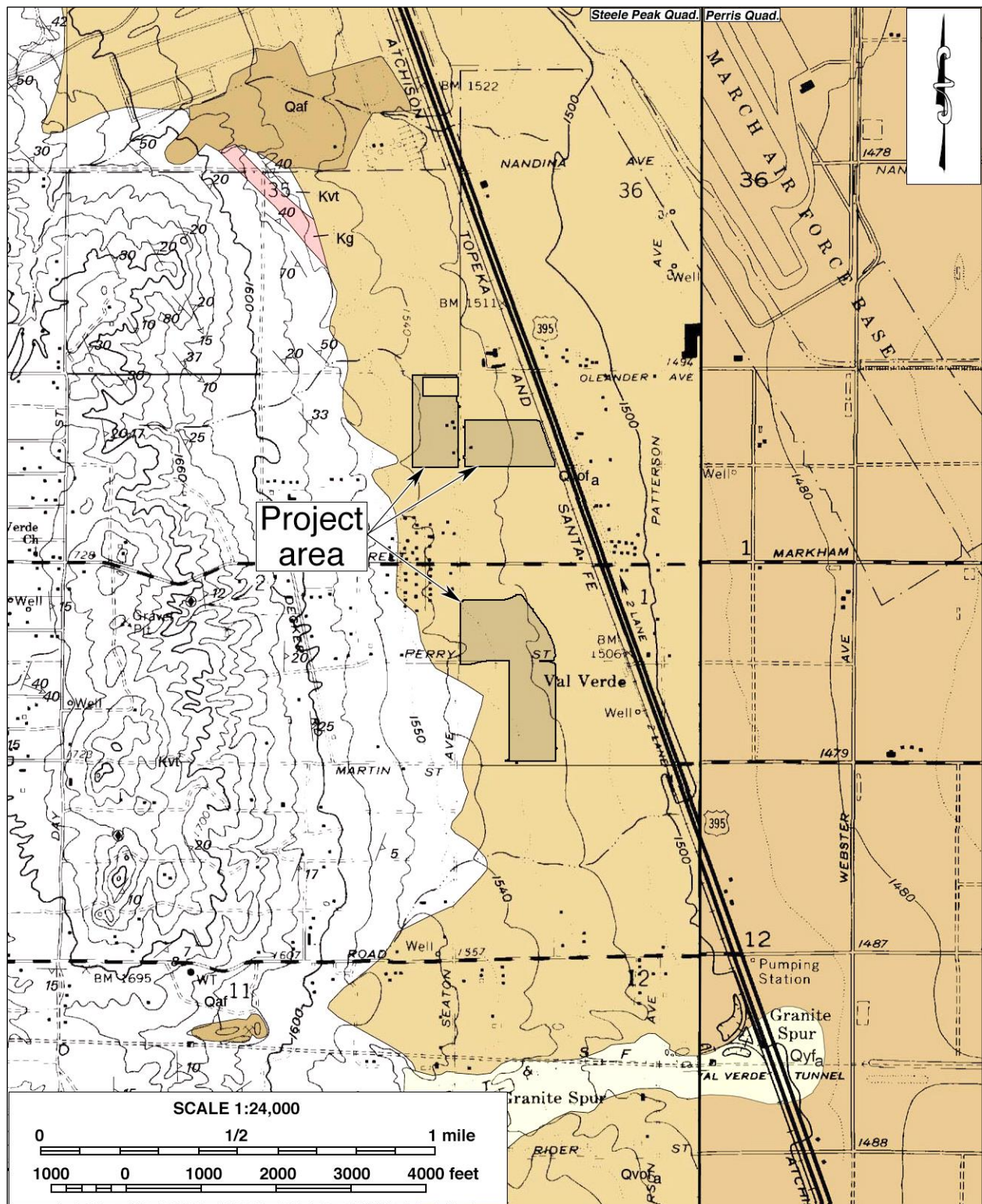


Figure 5. Geological map of the project vicinity. (Source: Morton 2001)

much of the project area to have been used for agricultural and residential purposes at least by the mid-1960s and impacted by development activities in the surrounding area since the 1990s (NETR Online 1966-2018), further reducing the paleontological sensitivity of the surface and near-surface sediments.

FIELD SURVEY

Throughout the course of the field survey, no surface manifestation of any paleontological remains was observed within the project area. Field observations confirmed that the ground surface in much of the project area, had been disturbed as a result of past residential and agricultural use of the property, as well as by construction of adjacent roads in the most recent decades.

DISCUSSION

According to the records search and literature review, the project area is situated upon alluvial sands and gravel of Holocene and/or Pleistocene age, which are conducive to the preservation of fossil remains. The Pleistocene sediments, in particular, have a high potential to contain significant, nonrenewable fossil remains. While no fossil localities were previously identified in or near the project area, the WSC noted that fossil discoveries from similar geologic formations were well-documented throughout southern California.

It was observed during the field survey that the ground surface in much of the project area has been disturbed in the past. However, the project location has been assigned a “High B” sensitivity rating for paleontological resources by the County of Riverside, indicating that fossil remains may be present at depths of four feet or more. Any earth-moving activities beyond the disturbed topsoil may disrupt or adversely affect paleontological resources. Therefore, while surface grading impacting previously disturbed soils will not likely reach any fossiliferous sediments, excavations into the native soils have a strong potential to encounter paleontological resources.

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 relatively undisturbed, native alluvial sands of Pleistocene age occurring subsurface in 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 depth of two feet should be monitored by a qualified paleontological monitor. The monitor should be prepared to quickly salvage fossil remains as they are unearthed to avoid construction delays and should collect samples of sediments that are likely to contain small fossils. However, the monitor must have the power to temporarily halt or divert ground disturbances to allow for the 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 Schmidting, 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/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, California Professional Geologist #3477.

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.

APPENDIX 2

RECORDS SEARCH RESULTS



March 9, 2022

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

Dear Ms. Gallardo,

This letter presents the results of a record search conducted for the Proposed Majestic Freeway Business Center Phase 2 Project in the Mead Valley area of Riverside County, California. The project site is located along both the east and west sides of Harvill Avenue (and the south side of Cajalco Expressway) from the Cajalco Expressway to Old Oleander Avenue, in the Township 4 South, Range 4 West SB BM, Sections 1 and 2 on the *Steele Peak and Perris, CA* USGS 7.5 minute quadrangle.

The geologic unit underlying this project is mapped as Holocene and Pleistocene alluvial sand and gravel, with Cretaceous quartz diorite within a 1 mile radius of the project (Dibblee and Minch, 2003). Pleistocene alluvial fan units are considered to be of high paleontological sensitivity. The Western Science Center does not have localities within the project area or within a 1 mile radius, but does have numerous fossil localities that presented paleontological finds within similar alluvial mapped units including those associated with the Aldi Distribution Center Project in Moreno Valley and the Diamond Valley Lake Project in Hemet, California.

Any fossils recovered from the project area would be scientifically significant. Excavation activity associated with development of the project area would impact the paleontologically sensitive Pleistocene 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,

A handwritten signature in black ink, appearing to read 'Brittney Stoneburg', written in a cursive style.

Brittney Elizabeth Stoneburg
Collections Technician

Proposed Majestic Freeway Business Center Phase 2 Project

project area + 1 mile radius

Legend

- grMz: Mesozoic granitic rocks, unit
- Proposed Majestic Freeway Business Center Phase 2 Project
- Q: Quaternary alluvium and marine deposits (Pliocene to Holocene)

