

Appendix D-2

Paleontological Resources Report for the
General Pump Equipment Yard, Hesperia Project
Assessor's Parcel No. 041-072-06

CRM Tech

June 13, 2024

PALEONTOLOGICAL RESOURCES ASSESSMENT
For the
GENERAL PUMP EQUIPMENT YARD HESPERIA PROJECT

Assessor's Parcel No. 0410-072-06
City of Hesperia, San Bernardino County, California

For Submittal to:

Planning Department
City of Hesperia
9700 Seventh Avenue
Hesperia, CA 92345

Prepared for:

ELMT Consulting
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Revised February 4, 2025
June 13, 2024

Approximately 4.53 acres
USGS Hesperia, Calif., 7.5' (1:24,000) quadrangle
S15, T4N R4W, San Bernardino Baseline and Meridian
CRM TECH Project No. 4105P

EXECUTIVE SUMMARY

Between February and June 2024, at the request of ELMT Consulting, CRM TECH performed a paleontological resource assessment on approximately 4.53 acres of vacant land in the City of Hesperia, San Bernardino County, California. The subject property is located on the southwest corner of Hercules Street and I Avenue, in Section 15, Township 4 North, Range 4 West San Bernardino Baseline and Meridian.

The study is part of the environmental review process for the development of a pump station on the property. The City of Hesperia, as the lead agency, required the study in compliance with the California Environmental Quality Act (CEQA). The purpose of the study is to provide the City with the necessary information and analysis to determine whether the proposed project could 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 project-related construction activities, CRM TECH initiated a paleontological records search with the Division of Earth Science of the San Bernardino County Museum, conducted a literature review, and carried out a systematic field survey of the project area in accordance with the guidelines of the Society of Vertebrate Paleontology. The results of these research procedures indicate that the project area is situated in an area where alluvial fan deposits of medium to coarse-grained sand from the Pleistocene Epoch (**Qoa**) are present below the disturbed surface soils. These older Pleistocene-age sediments have a high potential to contain significant, nonrenewable paleontological resources. Therefore, a qualified paleontologist should be retained to implement the paleontological resource impact mitigation measures presented in this document to prevent impacts on such resources or reduce the impacts to a level less than significant during project construction.

The main component of the mitigation program is paleontological monitoring when paleontologically sensitive soils are being impacted. More specific details regarding the paleontological monitoring program are included in the Recommendation section of this report, but include providing a Worker's Paleontological Sensitivity Training, monitoring in areas of potentially fossiliferous soils, collecting, processing, and inspecting samples of potentially fossiliferous sediments for small fossils. All recovered fossil remains should be identified to the lowest taxonomic level possible and curated at a repository with permanent retrievable storage. Under these conditions, CRM TECH further recommends that the project may be cleared to proceed in compliance with CEQA provisions on paleontological resources.

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INTRODUCTION

Between February and June 2024, at the request of ELMT Consulting, CRM TECH performed a paleontological resource assessment on approximately 4.53 acres of vacant land in the Antelope Valley/Victor Valley, in the northeastern part of the City of Hesperia San Bernardino County, California (Figure 1). The subject property of the study consists of Assessor's Parcel No. 0410-072-06, which is located on the southwest corner of Hercules Street and I Avenue (Figure 2), in Section 15, Township 4 North Range 4 West, San Bernardino Baseline and Meridian, as depicted in the United States Geological Survey Hesperia, California, 7.5' quadrangle (Figure 3).

The study is part of the environmental review process for the development of a pump station on the property. The City of Hesperia, as the lead agency, 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 City 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 with the Division of Earth Science of the San Bernardino County Museum, conducted a literature review, and carried out a systematic field survey of the project area in accordance with the guidelines of the Society of Vertebrate Paleontology.

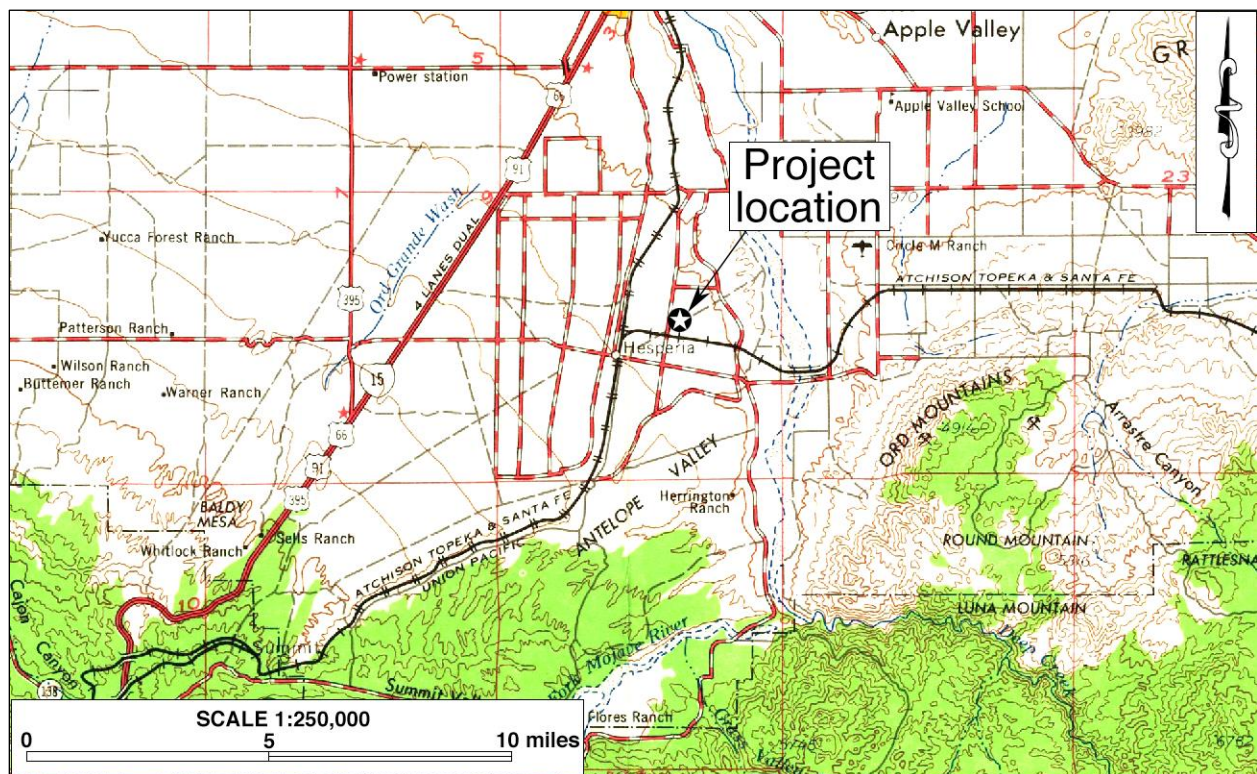


Figure 1. The project vicinity. (Based on the USGS San Bernardino, Calif., 1:250,000 quadrangle [USGS 1969]).



Figure 2. Recent aerial photograph/image of the project area and vicinity.

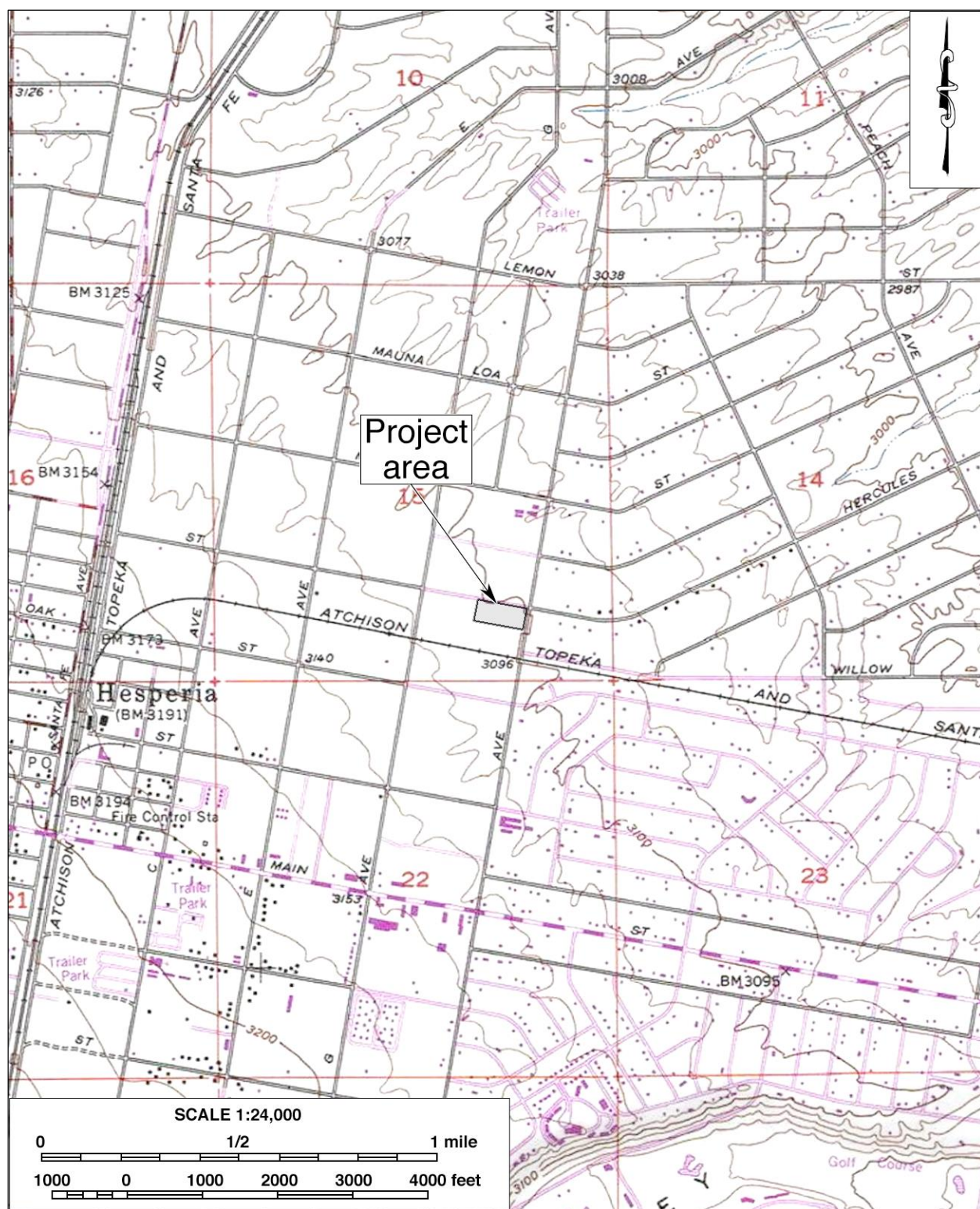


Figure 3. Project area and vicinity shown on a USGS map. (USGS Hesperia, Calif., 1:24,000 quadrangle [USGS 1980]).

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.

SETTING

The City of Hesperia occupies the southern portion of the Victor Valley, which lies on the southern rim of the Mojave Desert and immediately to the north of the San Bernardino-San Gabriel mountain ranges (Figure 1). The climate and environment of the area is typical of southern California “high desert” country, so-called because of its higher elevation than the Colorado Desert to the southeast. The climate is marked by extremes in temperature and aridity, with summer highs reaching well over 110°F and winter lows dipping below freezing. Average annual precipitation is less than five inches.

The project area is located on the southwest corner of the intersection of I Ave and Hercules Street (Figure 2). The project area is relatively level with the north-northeastern part at an elevation of approximately 3100 ft above sea level and the south-southwestern part only slightly higher (Figure 3). The entire area looks to have been recently cleared of foliage, with a ruderal groundcover plant, possibly creeping thyme, extending over much of the property but with a few Joshua trees, in varying stages of maturity, also present. The project area itself is situated within the Antelope Valley/Victor Valley, directly west of the Mojave River, which flows north from the San Bernardino Mountains through foothills of granitic, metamorphic, and sedimentary origin.

The project area is located within the Mojave Desert Geomorphic Province of southeastern California (Jenkins 1980:40-41; Harms 1996). Dibblee (1967) and Coombs et al. (1997:7) place the project area within the Western Mojave Desert, which is characterized by a high-elevation desert landscape marked by scattered, isolated mountains and numerous broad, shallow basins, some with dry lake beds at their low points. Many of these basins have pediment surfaces developed along the margins, separating them from the mountains (Dibblee 1967; Coombs et al. 1997). These pediment surfaces are commonly covered by desert pavement that protects them from sheetwash and channeling (Dibblee 1967; Coombs et al. 1997). The mountains and intermountain valleys of the Western Mojave Desert generally trend northwest-southeast, primarily as a result of faulting (Dibblee 1967; Coombs et al. 1997).

PALEONTOLOGICAL RESOURCES

An overview/review of types of paleontological resources is presented here. Also presented are the ways in which such resources are significant and the criteria that may be used to determine if an area may be sensitive for 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.

METHODS AND PROCEDURES

RECORDS SEARCH

The records search service was provided by the San Bernardino County Museum (SBCM) in Redlands. This institution maintains files of regional paleontological localities as well as supporting maps and documents. For this review, a search of the Regional Paleontological Locality Inventory (RPLI) at the SBCM was conducted. The records search results are used to identify any known paleontological localities within the project area or in the general vicinity.

LITERATURE REVIEW

In conjunction with the records search, CRM TECH paleontological monitor/report writer Frank Raslich and CRM TECH principal paleontologist Ron Schmidting reviewed geological literature pertaining to the project vicinity. Sources consulted during the review included primarily published literature on regional geology, topographic, geologic, and soils maps of the Hesperia area, aerial and satellite photographs available at the Nationwide Environmental Title Research (NETR) online website, 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 March 14, 2024, CRM TECH paleontologist Ron Schmidting carried out an intensive-level, on-foot field survey of the project area. During the survey, Schmidting walked along north-south transects spaced 15 meters (approx. 50 feet) apart across the entire site. Ground visibility was moderate (40-50%) throughout the property, with light vegetation covering portions of the project area (Figure 4). The property is relatively level, with I Avenue to the east, unpaved Hercules Street along the northern edge, a self-storage facility to the south, and with open ground to the west (Figure 2).



Figure 4. Typical landscapes in the project area. Left: view to the southwest; right: view to the southeast (March 14, 2024).

RESULTS AND FINDINGS

RECORDS SEARCH

The records search by the Division of Earth Science of the San Bernardino County Museum (SBCM) identified no known paleontological localities within the project area or within a one-mile radius (Kottkamp 2024; see App. 2). According to the SBCM (citing Dibblee [and Minch]), the geologic formation within and around the project area consists of older alluvial deposits (**Qoa**) of

medium to coarse-grained grey to brown sand and gravel from the Pleistocene Epoch (Kottkamp 2024). These units are considered to have high preservation value containing terrestrial macro- and microfossils in known localities of similarly mapped units throughout the southwest of North America, including much of the Mojave Desert (Harris 2014, cited by Kottkamp 2024). According to Kottkamp (2024), there are over 100 known paleontological localities within the **Qoa** deposits within 10 miles of the project area.

The SBCM identified a paleontological locality within one mile of the project area (Kottkamp 2024). This locality, SBCM 1.114.235, had root casts taken from both the surface and near surface. Approximately three miles from the project area, clusters of vertebrate paleontological resources have been identified (Kottkamp 2024).

LITERATURE REVIEW

The available geologic information was reviewed and the overall findings were then used to prepare the following discussion and to evaluate the project's potential to impact paleontological resources.

The basin areas of the Western Mojave Desert are filled with sediments ranging in age from Miocene to Recent (Dibblee 1967:49-82; Meisling and Weldon 1989:110). In the Barstow area these sedimentary rocks are interbedded with both acidic and basic flows of volcanic rocks (Bowen 1954; Dibblee 1967:82-110). The Hesperia-Victorville area is located on what is called the Victorville Fan (Meisling and Weldon 1989:108; Reynolds and Reynolds 1994).

The Victorville Fan sediments were once considered to have a high potential for containing nonrenewable vertebrate fossil remains (Reynolds and Reynolds 1994). However, more recent studies indicate that the Victorville Fan sediments, while potentially fossiliferous, are not as fossiliferous as the ancestral Pleistocene-age Mojave River sediments (Scott 2007). Cox and Tinsley (1999:51) show the distribution of what they call the Pleistocene Mojave River deposits between the Cajon Pass and Barstow. Based on their mapping, the project area is located mostly in an old pediment area developed on top of Mesozoic-age quartz monzonite outcrops and not within the Pleistocene Mojave River sediments (Cox and Tinsley 1999).

Based on the geologic mapping by Bowen (1954), Dibblee (1967), and Bortugno and Spittler (1986), the northern portion of the project area is situated on a pediment consisting mainly of Recent alluvium resting on Mesozoic-age granitic rocks. In a few areas there are some older, coarse-grained alluvial sediments of Pleistocene age outcropping and underlying the Recent alluvium. The project area and vicinity is mapped by Dibblee (2008) as **Qoa**, which is described as "...old alluvium...of locally derived detritus" (Dibblee 2008; Figure 5). Based on these mappings, the project area is situated to the west of the Mojave River (west of the Pleistocene Mojave River sediments) and does not contain any of the Victorville Fan sediments, but it does contain alluvium of Pleistocene and Recent age.

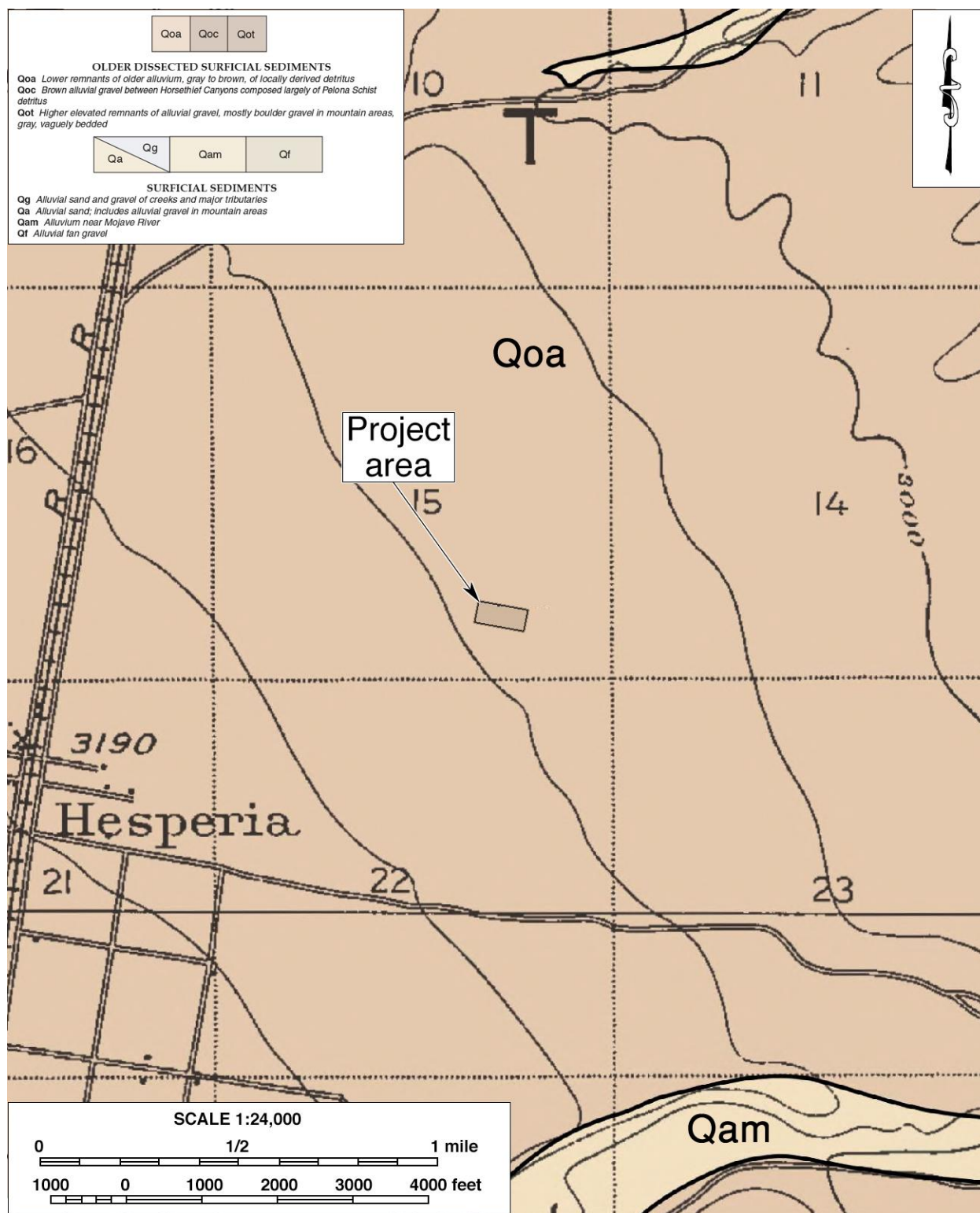


Figure 5. Geological map of the project vicinity. (Source: Dibblee 2008).

FIELD SURVEY

No indications of any fossil remains were discovered within or adjacent to the project area. There were ground squirrel burrows throughout the site allowing for inspection of shallow subsurface soils. Soils present at the site consist of coarse light brown sand from ancient alluvial deposits, where weathered granite and quartz pebbles are rare. The entire area appears to have been recently cleared of foliage as a short groundcover, possibly creeping thyme, extends over much of the property with only five Joshua trees, in varying stages of maturity, remaining (Figure 4). Traffic across the property on several dirt roads has disturbed the surface in those areas. The field survey yielded negative findings for paleontological resources on the surface of the property.

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 previously disturbed surface and near-surface soils in the project area have a relatively low potential to contain significant paleontological resources. The undisturbed soils below these Recent and disturbed soils, however, which consist of alluvial fan deposits of sand and gravel from the Pleistocene epoch, are considered to have a high potential to contain significant, nonrenewable paleontological resources. Thus, the project’s potential to impact significant, nonrenewable paleontological resources is high when construction activities extend into these older subsurface sediments.

Therefore, CRM TECH recommends to the City of Hesperia that the following paleontological resource impact mitigation program be implemented during the project to prevent impacts to paleontological resources or reduce them to a level less than significant. The following mitigation program is formulated in accordance with the provisions of CEQA (Scott and Springer 2003) as well as the proposed guidelines of the Society of Vertebrate Paleontology (2010). It is designed so that any paleontological resources that may be encountered during project implementation will be preserved and protected and impacts to them will be mitigated to a level of less than significant.

- Prior to the start of the proposed Project activities, all field personnel will receive a worker’s paleontological sensitivity training. The training will provide a description of the laws and ordinances protecting fossil resources, the types of fossil resources that may be encountered in the Project area, the role of the paleontological monitor, outline steps to follow in the event that a fossil discovery is made and provide contact information for the Project Paleontologist.
- Initial earth-moving operations within the project area should be spot-checked by a qualified paleontological monitor to identify potentially fossil-bearing sediments that may be present.

- Continuous, full-time paleontological monitoring should be instigated when paleontologically sensitive soils are being impacted.
- The paleontological monitor will have the power to temporarily halt or divert grading equipment to allow for the inspection, identification, and proper treatment of any fossiliferous soils and/or paleontological resources that may be exposed.
- The paleontological monitor must be properly equipped to recognize, document, and properly treat any paleontological resources that are encountered; this should include the collection and processing of samples of sediments that are likely to contain fossil remains of small vertebrates or invertebrates.
- If fossils are discovered, all work in the immediate vicinity should be halted to allow the paleontological monitor, and/or Project Paleontologist to evaluate the discovery and determine if the fossil may be considered significant. If the fossils are determined to be potentially significant, the Project Paleontologist (or paleontological monitor) should recover them following standard field procedures for collecting paleontological resources. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) or fossil beds require more extensive excavation and longer salvage periods.
- Samples of sediment around any larger fossils should be collected and processed to recover small fossils or fossil fragments that may be present in the vicinity.
- All fossil resources should be transported to the lab for cleaning and cataloguing, and all resources should be identified by a qualified expert to the lowest taxonomic level possible and analyzed for any pertinent information regarding the age(s) of the rock unit or sedimentary stratum, the depositional history of the region, data regarding the development of biological communities, the evolutionary relationships and developmental trends of the represented specimen, and any other information that may provide clues to past life in the area.
- All specimens should be 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 City of Hesperia, would signify completion of the program to mitigate potential impacts on paleontological resources.

Under these conditions, CRM TECH further recommends that the proposed project be cleared to proceed in compliance with CEQA provisions on paleontological resources.

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Scott, Eric

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Scott, Eric, and Kathleen Springer

2003 CEQA and Fossil Preservation in California. *Environmental Monitor* Fall:4-10. Association of Environmental Professionals, Sacramento, California.

Society of Vertebrate Paleontology

2010 Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Available online to download at:

https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf.

USGS (United States Geological Survey, U.S. Department of the Interior)

1969 Map: San Bernardino, Calif. (1:250,000); 1958 edition revised.

1980 Map: Hesperia, Calif. (7.5', 1:24,000); 1956 edition photorevised in 1978.

APPENDIX 1: PERSONNEL QUALIFICATIONS

RON SCHMIDTLING, M.S. Principal Paleontologist

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- Principal 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.
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.

FRANK J. RASLICH, M.A.
PALEONTOLOGICAL MONITOR/REPORT WRITER

Education

- 2016-2010 Ph.D. candidate, Michigan State University, East Lansing.
2010 M.A., Anthropology, Michigan State University, East Lansing.
2005 B.A., Anthropology, University of Michigan, Flint.
- 2019 Grant and Research Proposal Writing for Archaeologists; Society for American Archaeology online seminar.
- 2014 Bruker Industries Tracer S1800 pXRF Training; presented by Dr. Bruce Kaiser, Bruker Scientific.

Professional Experience

- 2022-2022 Project Archaeologist/Report Writer, CRM TECH, Colton, California.
Archaeological Monitor, Agua Caliente Band of Cahuilla Indians, Palm Springs, California.
- 2014-2022 Board of Directors, Ziibiwing Center of Anishinabe Culture and Lifeways, Saginaw Chippewa Indian Tribe of Michigan.
- 2008-2021 Archaeological Consultant, Saginaw Chippewa Indian Tribe of Michigan.
2019 Archaeologist, Sault Tribe of Chippewa Indians and Little Traverse Bay Band of Odawa Indians.
- 2016-2018 Adjunct Lecturer, Michigan State University, East Lansing.
2017-2018 Adjunct Lecturer, University of Michigan, Flint.
- 2009-2017 Teaching Assistant, Michigan State University, East Lansing.
- 2008-2014 Research Assistant, Intellectual Property Issues in Cultural Heritage, Simon Fraser University, British Columbia, Canada.
- 2010-2013 Research Assistant, Michigan State University, East Lansing.
- 2009-2011 Archaeologist/Crew Chief, Saginaw Chippewa Indian Tribe of Michigan.

Publications

- 2017 Preliminary Results of a Handheld X-Ray Fluorescence (pXRF) Analysis on a Marble Head Sarcophagus Sculpture from the Collection of the Kresge Art Center, Michigan State University. Submitted to Jon M. Frey, Department of Art, Art History, and Design, Michigan State University, East Lansing.
- 2013 Geochemical Analysis of the Dickenson Group of the Upper Peninsula, Michigan: A study of an Accreted Terrane of the Superior Province. *Geological Society of America Abstracts with Programs* 45:4(53).

APPENDIX 2

RECORDS SEARCH RESULTS



2024 Orange Tree Lane, Redlands, California 92374 | Phone: 909.798.8608

www.SBCounty.gov**Museum**
Division of Earth Science**David Myers**
Director**Scott Kottkamp**
Curator of Earth Science

2 March, 2024

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PALEONTOLOGY RECORDS REVIEW for proposed site of General Pump Yard
project (CRM TECH No. 4105P), Hesperia, San Bernardino County, California

Dear Ms. Gallardo,

The Division of Earth Science of the San Bernardino County Museum (SBCM) has completed a record search for the above-named project in San Bernardino County, California. The proposed project site (General Pump Yard-Hesperia) is in the city of Hesperia, California as shown on the United States Geological Survey (USGS) 7.5-minute Hesperia, California quadrangle.

Geologic mapping of that region done by Dibblee and Minch (2008) indicates the entire project site is situated atop Pleistocene age older alluvial deposits (Qoa), comprised of medium to coarse-grained grey to brown sand. This alluvium is derived from local highland sources such as the San Bernardino and San Gabriel mountains. Terrestrial macro- and microfossils are commonly found in Pleistocene age alluvium throughout the southwest of North America, including much of the Mojave Desert (Harris 2014). Over one hundred SBCM paleontological localities are found in Qoa within 10 miles of the project site.

For this review, I conducted a search of the Regional Paleontological Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no paleontological resources have been discovered within the proposed project site. However, a single SBCM paleontological locality is situated within a 1-mile radius of its perimeter. That locality, SBCM 1.114.235, is

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General Pump Yard-Hesperia (CRM Tech No. 4105P), Hesperia, CA
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approximately 0.6 miles west of the proposed project site. Root casts were collected both at and shallowly beneath the surface of SBCM 1.114.235. The nearest recorded vertebrate paleontological resources are situated in a cluster of SBCM localities approximately 3 miles away from the project site.

This records search covers only the paleontological records of the San Bernardino County Museum. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Please do not hesitate to contact us with any further questions that you may have.

Sincerely,



Scott Kottkamp, Curator of Earth Science
Division of Earth Science
San Bernardino County Museum

Literature Cited

- Dibblee, T.W., and Minch, J.A. 2008. Geologic map of the Hesperia 15 minute quadrangle, San Bernardino County, California. Dibblee Geological Foundation. Dibblee Foundation Map DF-382. Scale 1:62,500.
Available at: https://ngmdb.usgs.gov/Prodesc/proddesc_84182.htm (accessed 2 March 2024).
- Harris, A. 2014. Pleistocene Vertebrates of Southwestern USA and Northwestern Mexico. TEP Biodiversity Collections, Department of Biological Sciences, and Centennial Museum, University of Texas at El Paso. El Paso, TX. 10.13140/2.1.3490.7527.
Available at: www.utep.edu/leb/pleistnm/ (accessed 2 March 2024).