Paleontological Resource Assessment for the Mixed - Use Development Project, Assessor's Parcel No. 360-130-003, City of Menifee, Riverside County, California

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Romoland, CA USGS 7.5-min. quadrangle
37 acres
Results: No paleontological resources were recovered from the Project area

SUMMARY OF FINDINGS

At the request of the JPN Corporation, Applied EarthWorks, Inc. (*Æ*) performed a paleontological resource assessment for the Mixed-Use Development Project, Assessor's Parcel No. 360-130-003 (Project) located in the City of Menifee (City), Riverside County, California. The proposed Project consists of the construction of the mixed-use development on a 37-acre parcel of land located at the northwest corner of Haun and Holland road. The City is the lead agency for the purposes of the California Environmental Quality Act (CEQA). This report summarizes the methods and results of the paleontological resource assessment and provides Project-specific management recommendations.

This assessment included a comprehensive review of published and unpublished literature and museum collections records maintained by the Natural History Museum of Los Angeles County. The purpose of the literature review and museum records search was to identify the geologic units underlying the Project area and to determine whether previously recorded paleontological localities occur either within the Project boundaries or within the same geologic units elsewhere. The museum records search was followed by a field survey, during which the ground surface of the Project area was visually inspected for exposed fossils and the geologic exposures were evaluated for their potential to contain preserved fossil material at the subsurface. Using the results of the museum records search and field survey, the paleontological resource potential of the Project area was determined in accordance with Society of Vertebrate Paleontology guidelines (2010).

Published geologic mapping indicates that the Project area is immediately underlain Quaternary alluvial fan deposits. Museum records found no previously recorded paleontological localities directly within Project boundaries; however, at least two previously documented fossil localities have been reported nearby in Riverside County from within geologic units that are similar to those that underlie the Project area. No paleontological resources were found during the course of the field survey.

As a result of this study, the Project area is determined to have low to high paleontological resource potential, dependent on depth; therefore, the likelihood of impacting scientifically significant vertebrate fossils as a result of Project development is low to high, increasing with depth. It is recommended that a qualified paleontologist be retained to develop and implement a Paleontological Resource Impact Mitigation Program during construction. At the conclusion of all Project-related ground disturbances, all significant fossils found during the course of on-site monitoring should be permanently curated at the Western Science Center and a final technical report of findings should be drafted and submitted to the City. By implementing these mitigation measures during Project development, adverse impacts to paleontological resources can be reduced to a less than significant level pursuant to the requirements of CEQA.

CONTENTS

1 INTRODUCTION....1
1.1 PROJECT BACKGROUND AND DESCRIPTION....1
1.2 PURPOSE OF INVESTIGATION....1
1.3 REPORT ORGANIZATION....1

2 REGULATORY FRAMEWORK....5
2.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT....5
2.2 CITY OF MENIFEE GENERAL PLAN....5

3 PALEONTOLOGICAL RESOURCE ASSESSMENT GUIDELINES....6
3.1 DEFINITION OF PALEONTOLOGICAL RESOURCES AND SIGNIFICANCE CRITERIA....6
3.2 PROFESSIONAL STANDARDS AND PALEONTOLOGICAL RESOURCE SENSITIVITY....6

4 METHODS....8
4.1 LITERATURE REVIEW AND RECORDS SEARCH....8
4.2 FIELDWORK....8
4.3 KEY PERSONNEL....8

5 GEOLOGY AND PALEONTOLOGY....9
5.1 REGIONAL GEOLOGY....9
5.2 GEOLOGY AND PALEONTOLOGY OF THE PROJECT AREA....9
5.2.1 Old Alluvial Fan Deposits (Qof)....9

6 PALEONTOLOGICAL FIELD RECONNAISSANCE....13

7 ANALYSIS AND RESULTS....17
7.1 MUSEUM RECORDS SEARCH RESULTS....17
7.2 DETERMINATION OF PALEONTOLOGICAL RESOURCE POTENTIAL FOR GEOLOGIC UNITS WITHIN THE PROJECT AREA....18

8 FINDINGS AND MANAGEMENT RECOMMENDATIONS....19
8.1 WORKER'S ENVIRONMENTAL AWARENESS TRAINING....19
8.2 PALEONTOLOGICAL MITIGATION MONITORING....19
8.3 FOSSIL PREPARATION, CURATION, AND REPORTING....20

9 CONCLUSIONS....21

10 REFERENCES CITED....22

FIGURES
1-1 Project vicinity map....3
1-2 Project location map....4

5-1 Paleontological Sensitivity of the Project Area, as depicted in the City of Menifee General Plan (The Planning Center/DC&E 2013:5.5-13) 10
5-2 Geologic units in the Project area 11
6-1 Overview of the Project area, view to the northwest 13
6-2 Artificial drainage bisects the southern Project area, view to the southwest 14
6-3 Quaternary alluvium deposits within the artificial drainage channel are obscured beneath, poorly developed soil, previously disturbed sediment, and slope wash 15
6-4 Quaternary older alluvial fan deposits underlying the Project area are nearly completely obscured by soil development, vegetation, and previous anthropogenic ground disturbances 15

TABLES

3-1 Paleontological Sensitivity Categories 7
7-1 Vertebrate Localities Reported in the Vicinity of the Project Area in Riverside County 17

1
INTRODUCTION

At the request of the JPN Corporation, Applied EarthWorks, Inc. (*Æ*) performed a paleontological resource assessment for the Mixed-Use Development Project, Assessor's Parcel No. 360-130-003 (Project) located in the City of Menifee, Riverside County, California (Figure 1-1). The study consisted of a museum records search, a comprehensive literature and geologic map review, and a field reconnaissance survey. This report summarizes the methods and results of a paleontological resource assessment and provides Project-specific management recommendations. This assessment was performed to satisfy the requirements of the California Environmental Quality Act (CEQA) and was conducted in accordance with the professional standards and guidelines set forth by the Society of Vertebrate Paleontology (SVP) (2010). The City of Menifee (City) is the lead agency for the purposes of CEQA.

1.1 PROJECT BACKGROUND AND DESCRIPTION

The Project area consists of a 37-acre parcel proposed for a mixed-use development. Ground disturbance associated with the proposed development is expected to extend up to 5 feet in depth. The Project area is located north of Holland Road between Haun Road and Interstate 215 (I-215) in the City of Menifee. Specifically, the Project is at 1,440 to 1,446 feet above mean sea level (amsl) in the southeast quarter of Section 3 Township 6 South, Range 3 West, San Bernardino Baseline and Meridian, on the Romoland 7.5' U.S. Geological Survey topographic quadrangle (Figure 1-2). A minor ephemeral drainage bisects the Project area near its southern boundary and enters a larger unlined, leveed channel, which is orientated north-south along the eastern boundary of the Project area. A commercial retail development is situated south of the Project area with undeveloped land located west of Haun Road.

On the basis of recommendations set forth in a peer-review of the cultural assessment of the Project, and consistent with the City of Menifee General Plan (2013), as part of the permit approval process, the City has requested that a paleontological resource assessment be conducted for compliance with CEQA (ESA PCR, 2016).

1.2 PURPOSE OF INVESTIGATION

The purpose of this paleontological resource assessment is to (1) identify the geologic units within the Project area, (2) assess their paleontological resource potential (i.e., "sensitivity"), (3) evaluate whether the Project has the potential to adversely impact scientifically significant paleontological resources, and (4) provide Project-specific mitigation measures to be implemented during Project development (as necessary).

1.3 REPORT ORGANIZATION

This report documents the results of *Æ*'s paleontological resource assessment of the Project area. Chapter 1 introduced the scope of work, identified the Project location, described the Project,

and defined the purpose of the investigation. Chapter 2 outlines the regulatory framework governing the Project. Chapter 3 presents the paleontological resource guidelines and professional standards used for this assessment, and Chapter 4 presents the methods. The geology and paleontology of the Project area are discussed in Chapter 5, and the results of the field survey are presented in Chapter 6. Chapter 7 provides analysis, and management recommendations are provided in Chapter 8. The conclusions are discussed in Chapter 9, followed by a list of references in Chapter 10.

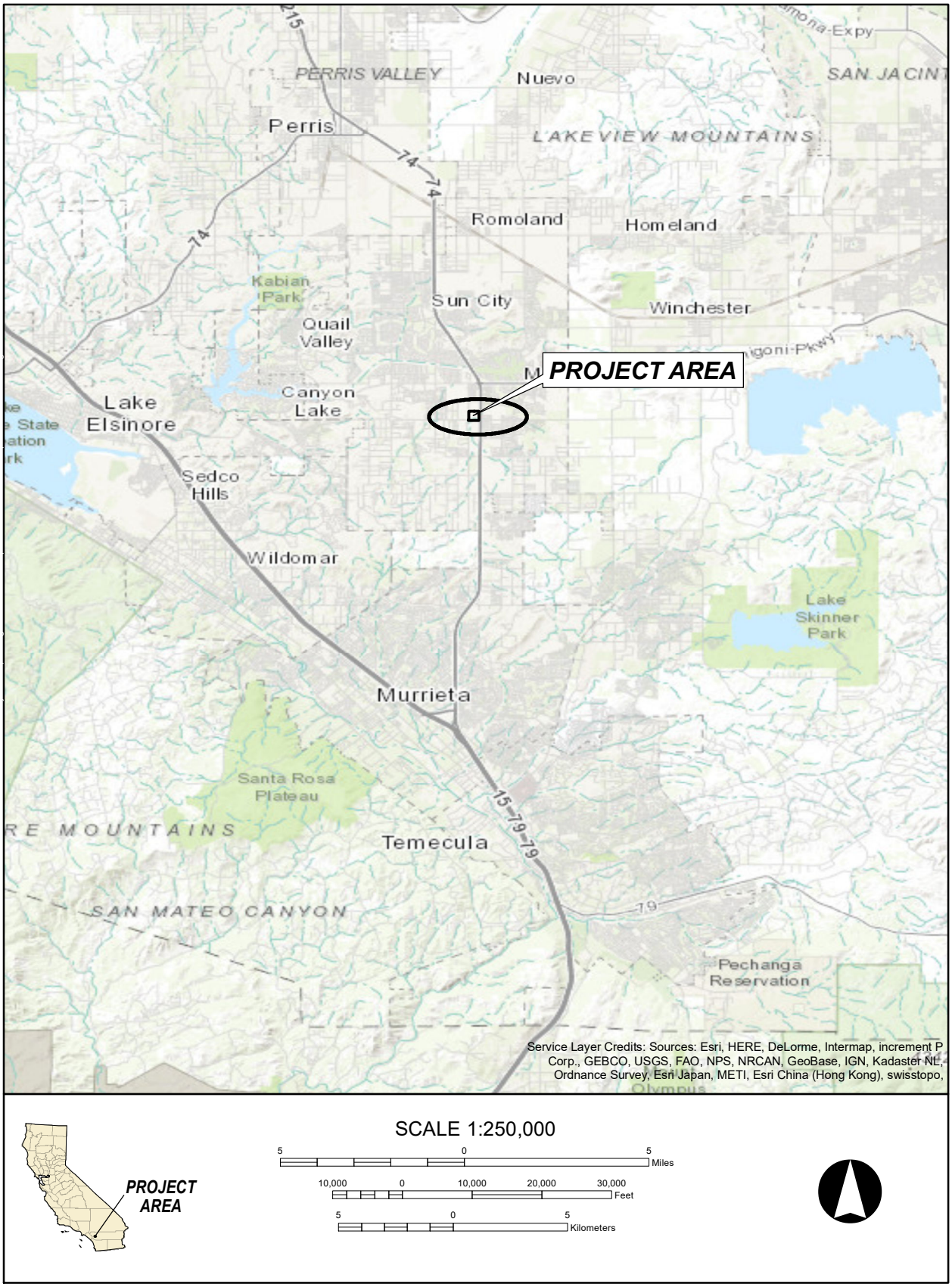

Figure 1-1. Project vicinity map.

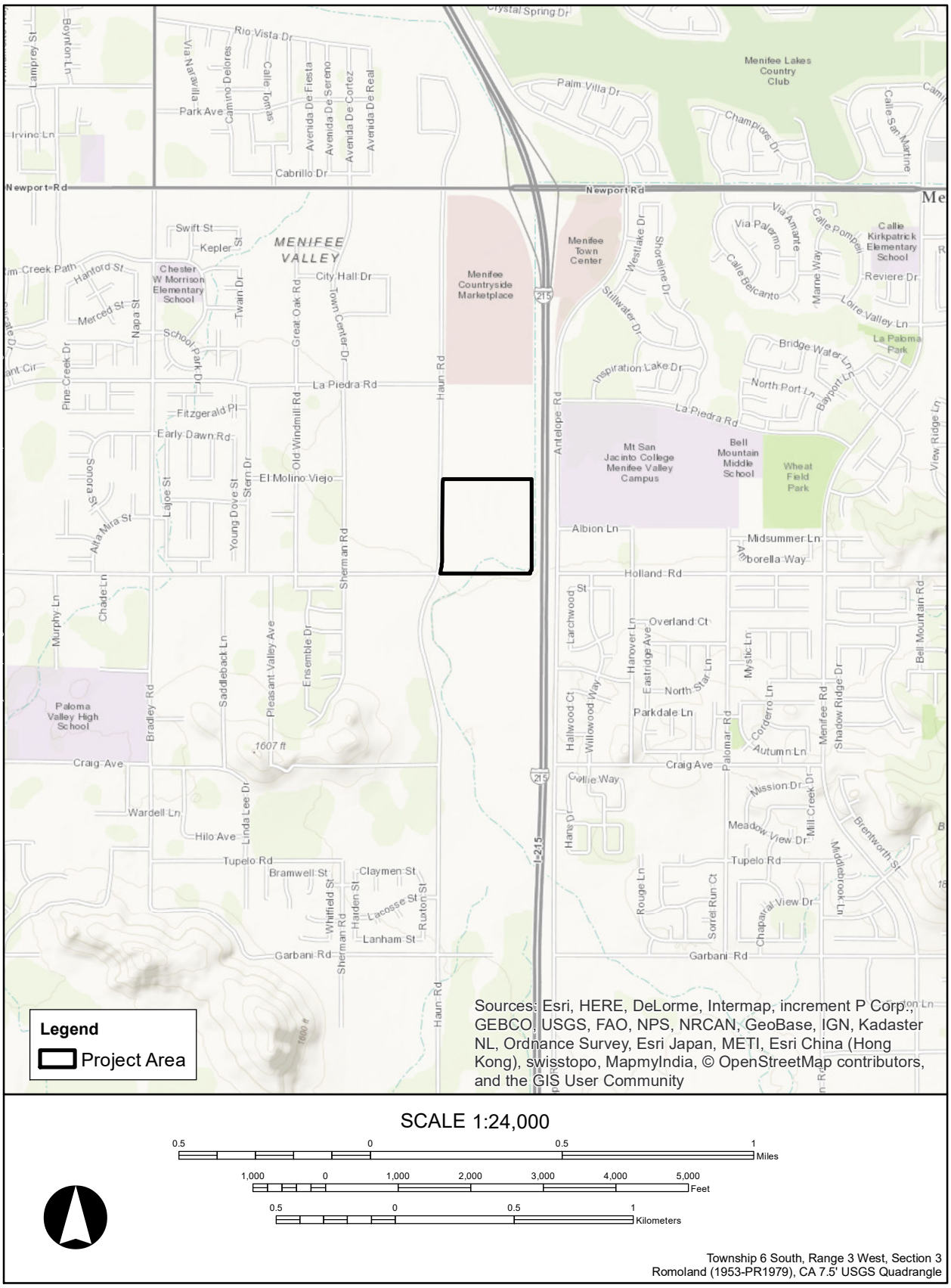

Figure 1-2. Project location map.

2
REGULATORY FRAMEWORK

Paleontological resources (i.e., fossils) are considered to be nonrenewable scientific resources because once destroyed, they cannot be replaced. As such, paleontological resources are afforded protection under the various state and local laws and regulations briefly discussed in this chapter.

2.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

Paleontological resources cannot be replaced once they are destroyed. Therefore, paleontological resources are considered nonrenewable scientific resources and are protected under the CEQA. Specifically, in Section V(c) of Appendix G of the CEQA Guidelines, the "Environmental Checklist Form," the question is posed: "Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" In order to determine the uniqueness of a given paleontological resource, it must first be identified or recovered (i.e., salvaged). Therefore, mitigation of adverse impacts to paleontological resources is mandated by CEQA.

2.2 CITY OF MENIFEE GENERAL PLAN

Paleontological resources are addressed under the Open Space and Conservation Element OSC-5 of the City of Menifee General Plan, Goal OSC-5, which aims to "protect" cultural resources, including paleontological resources. Specifically, Policy OCS-5.1 mandates that the City (2013) "preserve and protect archaeological and historic resources and cultural sites, places, districts, structures, landforms, objects and native burial sites, traditional cultural landscapes and other features, consistent with state law and any laws, regulations or policies which may be adopted by the city to implement this goal and associated policies."

3
PALEONTOLOGICAL RESOURCE ASSESSMENT GUIDELINES

3.1 DEFINITION OF PALEONTOLOGICAL RESOURCES AND SIGNIFICANCE CRITERIA

Paleontological resources are the evidence of once-living organisms as preserved in the rock record. They include both the fossilized remains of ancient plants and animals and the traces thereof (trackways, imprints, burrows, etc.). In general, fossils are considered to be greater than 5,000 years old (older than Middle Holocene) and are typically preserved in sedimentary rocks. Although rare, fossils can also be preserved in volcanic rocks and low-grade metamorphic rocks formed under certain conditions (SVP, 2010).

Significant paleontological resources are defined as "identifiable" vertebrate fossils and uncommon invertebrate, plant, and trace fossils that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, or biochronological data (SVP, 2010). These data are important because they are used to examine evolutionary relationships, provide insight on the development of and interaction between biological communities, establish time scales for geologic studies, and for many other scientific purposes (Scott and Springer, 2003; SVP, 2010).

3.2 PROFESSIONAL STANDARDS AND PALEONTOLOGICAL RESOURCE SENSITIVITY

Absent specific agency guidelines, most professional paleontologists in California adhere to guidelines set forth by SVP in "Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources" (SVP, 2010). These guidelines establish detailed protocols for the assessment of the paleontological resource potential (i.e., "sensitivity") of a project area and outline measures to follow in order to mitigate adverse impacts to known or unknown fossil resources during project development. In order to prevent project delays, SVP highly recommends that the owner or developer retain a qualified professional paleontologist in the advanced planning phases of a project to conduct an assessment and to implement paleontological mitigation during construction, as necessary.

Using baseline information gathered during a paleontological resource assessment, the paleontological resource potential of the geologic unit(s) (or members thereof) underlying a project area can be assigned to one of four categories defined by SVP (2010). These categories include high, undetermined, low, and no potential. The criteria for each sensitivity classification, and the corresponding mitigation recommendations, are summarized in Table 3-1 below.

If a project area is determined to have high or undetermined potential for paleontological resources following the initial assessment, then SVP recommends that a paleontological resources mitigation plan be developed and implemented during the construction phase of a project. The mitigation plan describes, in detail, when and where paleontological monitoring will take place and establishes communication protocols to be followed in the event that an unanticipated fossil discovery is made during project development. If significant fossil resources are known to occur within the boundaries of the project and have not been collected, then the

plan will outline the procedures to be followed prior to the commencement of construction (i.e., preconstruction salvage efforts or avoidance measures, including fencing off a locality). Should microfossils be known to occur in the geologic unit(s) underlying the project area or suspected to occur, then the plan will describe the methodology for matrix sampling and screening.

Table 3-1
Paleontological Sensitivity Categories

Resource Potential	Criteria	Mitigation Recommendations
No Potential	Rock units that are formed under or exposed to immense heat and pressure, such as high-grade metamorphic rocks and plutonic igneous rocks.	No mitigation required.
Low Potential	Rocks units that have yielded few fossils in the past, based upon review of available literature and museum collections records. Geologic units of low potential also include those that yield fossils only on rare occasion and under unusual circumstances.	Mitigation is not typically required.
Undetermined Potential	In some cases, available literature on a particular geologic unit will be scarce and a determination of whether or not it is fossiliferous or potentially fossiliferous will be difficult to make. Under these circumstances, further study is needed to determine the unit's paleontological resource potential (i.e., field survey).	A field survey is required to further assess the unit's paleontological potential.
High Potential	Geologic units with high potential for paleontological resources are those that have proven to yield vertebrate or significant invertebrate, plant or trace fossils in the past or are likely to contain new vertebrate materials, traces, or trackways. Rock units with high potential also may include those that contain datable organic remains older than late Holocene (e.g., animal nests or middens).	Typically, a field survey as well as onsite construction monitoring will be required. Any significant specimens discovered will need to be prepared, identified, and curated into a museum. A final report documenting the significance of the finds will also be required.

Adapted from SVP (2010).

The paleontological mitigation plan should be prepared by a qualified professional paleontologist and developed using the results of the initial paleontological assessment and survey. Elements of the plan can be adjusted throughout the course of a project as new information is gathered and conditions change, so long as the lead agency is consulted and all parties are in agreement. For example, if after 50 percent of earth disturbing activities have occurred in a particular unit or area, and no fossils whatsoever have been discovered, then the project paleontologist can reduce or eliminate monitoring efforts in that unit or area.

4
METHODS

4.1 LITERATURE REVIEW AND RECORDS SEARCH

Paleontological resources are not found in "soil" but are contained within the geologic deposits or bedrock that underlies the soil layer. Therefore, in order to ascertain whether a particular study area has the potential to contain significant fossil resources at the subsurface, it is necessary to review relevant scientific literature and geologic mapping to determine the geology and stratigraphy of the area. Further, to delineate the boundaries of an area of paleontological sensitivity, it is necessary to determine the extent of the entire geologic unit because paleontological sensitivity is not limited to surface exposures of fossil material. To determine whether fossil localities have been previously discovered within the Project area or a particular rock unit, a search of pertinent local and regional museum repositories for paleontological localities within and near the Project was performed. For this Project, a museum records search was conducted at the Natural History Museum of Los Angeles County (LACM).

4.2 FIELDWORK

A field visit to the Project area was conducted on October 18, 2016. The purpose of the field survey was to inspect the ground surface visually for exposed fossils and to evaluate geologic exposures for their potential to contain preserved fossil material at the subsurface.

4.3 KEY PERSONNEL

This paleontological assessment was prepared under the direction of Æ's Paleontology Program Manager, Jessica DeBusk, who provided quality assurance review of this report. Associate Paleontologist Heather Clifford was the primary author of this report, conducted the field survey, and produced all graphics. DeBusk has more than 13 years of professional experience as a consulting paleontologist and meets the SVP's definition of a qualified professional paleontologist.

5
GEOLOGY AND PALEONTOLOGY

5.1 REGIONAL GEOLOGY

The Project area is located in the Menifee-Perris Valley within the northern part of the geologically complex Peninsular Ranges geomorphic province. A geomorphic province is a region of unique topography and geology that is distinguished from other regions based on its landforms and diastrophic history. The Peninsular Ranges are a northwest-southeast oriented complex of blocks that extend 125 miles from the Transverse Ranges and Los Angeles Basin to the tip of Baja California. The Peninsular Ranges are bounded to the east by the Colorado Desert and range in width from 30 to 100 miles (Norris and Webb, 1976). The Project area is situated approximately 5 miles east of the Santa Ana Mountains and 20 miles west of the San Jacinto Mountains, within the central part of the Perris Block, a relatively stable rectangular structural unit positioned between the Elsinore and San Jacinto fault zones (Morton, et al., 2003). The geology in the vicinity of the Project area includes Quaternary sedimentary deposits that unconformably overlie Cenozoic plutonic bedrock and Mesozoic metamorphic intrusive rocks (Morton and Miller, 2006).

According to the paleontological assessment conducted for the City of Menifee's General Plan Draft Environmental Impact Report (The Planning Center/DC&E 2013:5.5-13), the Project area is located within an area of high paleontological sensitivity (Figure 5-1). The analysis used topographic highs and lows as a baseline against which to estimate paleontological sensitivity. Hills were assumed to generally lack potential for significant fossil resources with alluvial plains and the sediments flanking the base of the hills have high paleontological sensitivity.

5.2 GEOLOGY AND PALEONTOLOGY OF THE PROJECT AREA

The Project area is mapped at a scale of 1:24,000 by Morton et al. (2003) and a scale of 1:100,000 by Morton and Miller (2006). According to published geologic mapping, the entire Project area is directly underlain by Quaternary older alluvial fan deposits (Qof) (Figure 5-2).

5.2.1 Old Alluvial Fan Deposits (Qof)

The Project area is immediately underlain by middle to late Pleistocene (mid-Quaternary Period) alluvial fan deposits. These *Quaternary older alluvial fan deposits* (Qof) disconformably overlie Cretaceous granitic bedrock and Mesozoic metamorphic intrusive rocks at an unspecified depth (Morton et al., 2003). (Due to the high heat and pressure of their formation deep below the surface of the Earth, plutonic igneous rocks and high- to medium-grained metamorphic do not contain fossils). The alluvial fan sediments are composed of tan to reddish-brown sandstone and siltstone deposited in alluvial fan and local channel environments during the Pleistocene Epoch (2.6 million years ago [Ma] to 11,700 years before present [BP]). The deposits are moderately consolidated and poorly indurated, with angular to subangular clasts, local pebble conglomerate lenses, moderate soil formation, and abundant dissection (Morton et al., 2003; Morton and Miller, 2006).

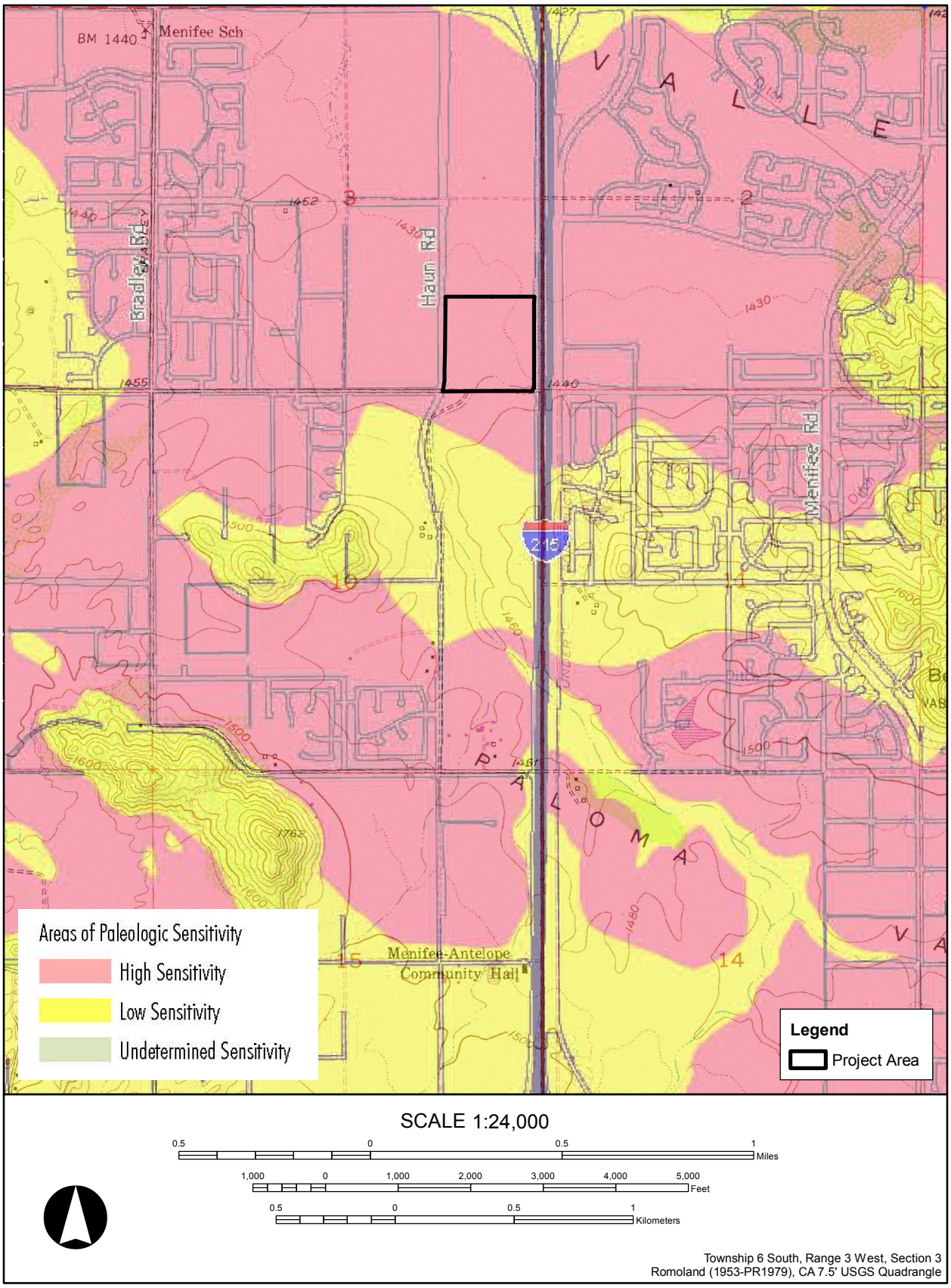

Figure 5-1. Paleontological Sensitivity in the Project Area, as depicted in the City of Menifee General Plan (The Planning Center/DC&E 2013:5.5-13).

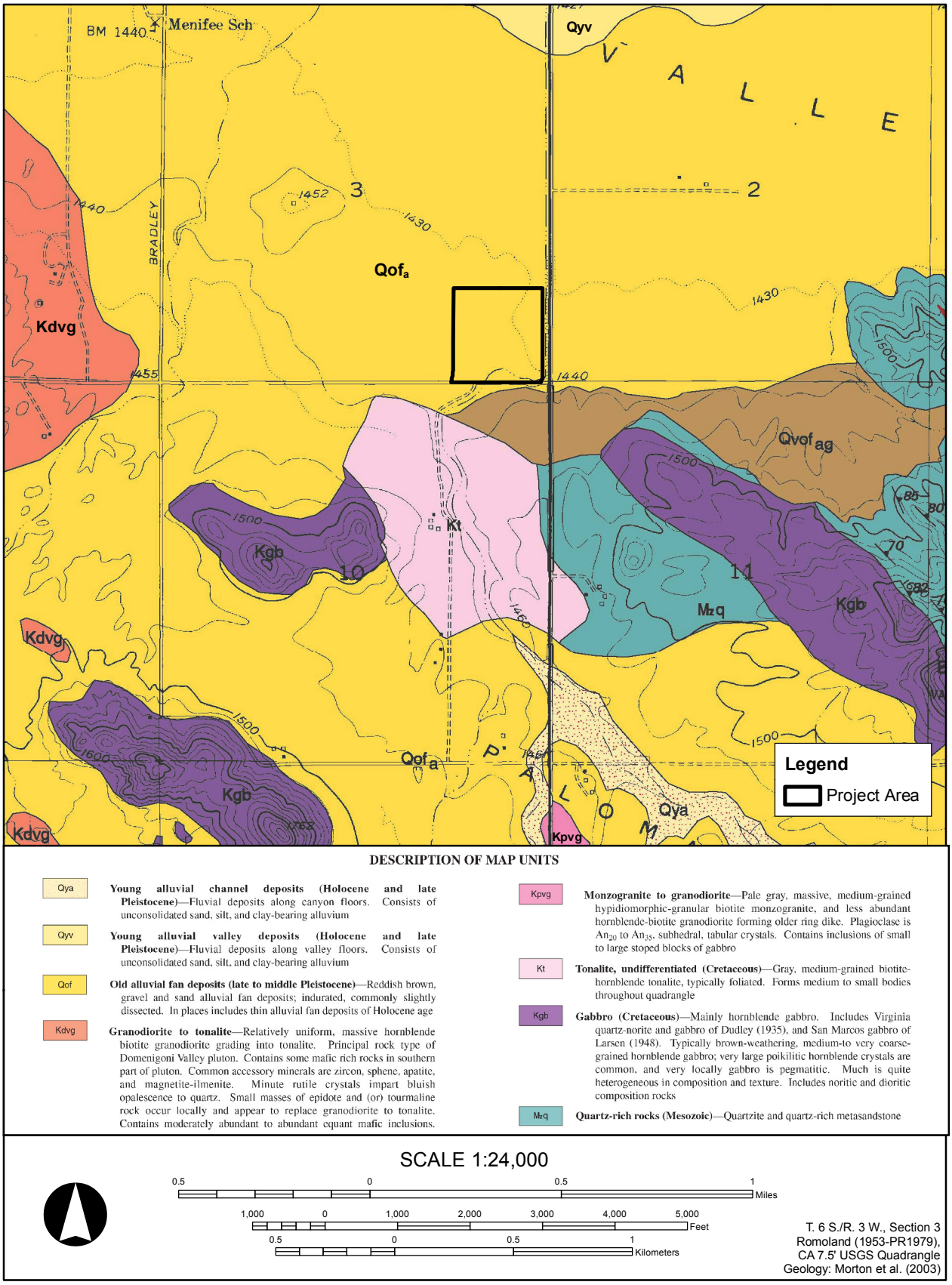

Figure 5-2 Geologic Units in the Project Area.

Pleistocene age alluvial, fluvial, and lacustrine deposits have proven to yield scientifically significant paleontological resources throughout Southern California from the coastal areas to the inland valleys. Northeast of the Project area, in the vicinity of Lakeview, a diverse assemblage of fossil resources has been recovered including *Mammuthus* sp. (mammoth), *Smilodon* sp. (sabre-toothed cat), *Equus* sp. (extinct horse), *Bison antiquus* (bison), and numerous small mammals, reptiles, invertebrates, and plant remains (Springer et al., 2009). East of the Project area, the largest known open-environment non-asphaltic late Pleistocene fossil assemblage has been documented in Diamond and Domenigoni valleys. Discovered during excavations of the Diamond Valley Lake, this locality has yielded nearly 100,000 identifiable fossils representing over 105 vertebrate, invertebrate, and plant taxa. The vertebrate taxa recovered includes reptiles such as frogs, turtles, and lizards; birds such as robins, swallows, jays, ravens, hawks, and ducks; small mammals such as rabbit, squirrel, mice, and weasels; and large mammals such as fox, bear, coyote, deer, bison, mammoths, mastodons, and ground sloths (Springer et al., 2009). The invertebrate taxa recovered includes ostracodes, snails, termites, slugs, beetles, and bivalves and the plant taxa recovered includes well preserved diatoms, pollen, and wood debris (Anderson et al., 2002). Northwest of the Project area near Lake Mathews, *Ustatochoerus cf. californicus (*ground dwelling herbivore) and fossilized camel remains were recovered within late Cenozoic fluvial and alluvial deposits (Woodford et al., 1971).

6
PALEONTOLOGICAL FIELD RECONNAISSANCE

A field survey of the Project area and vicinity was conducted by Æ Associate Paleontologist Clifford on October 18, 2016. During the course of fieldwork, a pedestrian walkover was performed of the entire Project area, published geologic maps were verified, and the ground surface within the Project boundary was visually examined for the evidence of paleontological resources. Special attention was paid to areas where the underlying geologic deposits were exposed (e.g., within the drainage channel). Project areas obscured at the surface were not comprehensively examined; however, the majority of the Project area was subject to an intensive pedestrian walkover. A windshield survey of the geology and topography surrounding the Project area was accomplished, and rock outcrops were examined for surface fossils. Project areas underlain by Quaternary sedimentary units were found to be nearly completely obscured by vegetation, soil development, refuse and spoils piles, previous tilling and grading, and unlined drainage channel construction. In the field, Clifford utilized a tablet computer equipped with Global Positioning System (GPS), topographic maps, and aerial photographs to locate geologic unit and Project area boundaries. Notes were taken on the regional geology and lithology of exposed sediments, and photographs were taken to document the survey (Figure 6-1).

Figure 6-1. Overview of the Project area, view to the northwest.

The topography of the Project area consists of a relatively flat agricultural plain bisected by an ephemeral artificial drainage channel (Figure 6-2). These late Pleistocene sediments are overlain

by poorly developed soil, composed of organic-poor tan to light brown loamy soil with scant rounded granule-, subangular pebble-, and angular cobble-sized clasts of granitic rock fragments. Based on field observations made along the drainage channel, the Quaternary older alluvial fan deposits in the Project area are composed of unconsolidated to poorly consolidated, tan to brown, coarse sand and silt, with 50 percent angular granitic clasts of predominately fine pebble size (2 – 10 millimeter [mm], average), underlying approximately 1 – 2 feet of soil development (Figure 6-3). Elsewhere in the Project area, the Quaternary older alluvial fan deposits underlying the Project area are completely obscured by vegetation, soil development, and previous anthropogenic ground disturbances, including artificial drainage channels and tilling to an approximate maximum depth of 2 – 4 feet below ground surface (bgs) (Figure 6-4). Vegetation consists of dense grasses and shrubs, approximately 1 – 4 feet in height.

Figure 6-2. Artificial drainage bisects the southern Project area, view to the southwest.

Figure 6-3. Quaternary alluvium deposits within the artificial drainage channel are obscured beneath, poorly developed soil, previously disturbed sediment, and slope wash.

Figure 6-4. Quaternary older alluvial fan deposits underlying the Project area are nearly completely obscured by soil development, vegetation, spoils, trash, and previous anthropogenic ground disturbances, including tilling to a depth of 2 – 4 feet bgs. View to the southeast.

No fossil resources were discovered during the course of fieldwork. However, nearly 100 percent of the survey area was obscured by vegetation, soil development, or anthropogenic disturbances, which limited surface visibility. The Pleistocene sedimentary deposits that underlie the majority of the Project area are characterized by fine-to coarse-grained sediments that have proven to be conducive to the preservation of vertebrate remains in Riverside County; therefore, these rock units may contain an unknown number of fossil resources at the subsurface.

7
ANALYSIS AND RESULTS

7.1 MUSEUM RECORDS SEARCH RESULTS

To determine whether fossil localities have been previously discovered within the Project area, a museum records search was performed at the LACM on October 13, 2016. The LACM reports that there are no previously recorded vertebrate fossil localities directly within Project boundaries; however, McLeod (2016) reports that locality LACM 5168, recorded west of the Project area on the western margin of Menifee Valley near the Canyon Lake (Railroad Canyon Reservoir), yielded fossil remains of horse from similar Quaternary older alluvium. Additionally, McLeod (2016) reports that another vertebrate fossil locality, LACM 6059, was identified further west, in the vicinity of Lake Elsinore. LACM 6059 yielded a specimen of fossil camel from similar Pleistocene alluvial deposits. The results of the museum records and database search are summarized below in Table 7-1.

Table 7-1
Vertebrate Localities Reported in the Vicinity of the Project Area in Riverside County

Locality No.	Geologic Unit	Age	Taxa
LACM 5168	Quaternary older alluvium	Pleistocene	*Equus* sp.
LACM 6059	Quaternary older alluvium	Pleistocene	*Camelops* sp. (camel)

Source: McLeod, 2016

7.2 DETERMINATION OF PALEONTOLOGICAL RESOURCE POTENTIAL FOR GEOLOGIC UNITS WITHIN THE PROJECT AREA

Based on the literature review, museum records search results, and field survey, the Project area is underlain by geologic units determined to have a low to high paleontological sensitivity, in accordance with criteria set forth by SVP (2010). The Quaternary older alluvial fan deposits have a high potential for paleontological resources because similar deposits in the vicinity of the Project area and throughout Riverside County have proven to yield significant vertebrate fossils. On the basis of the results of the field survey, the Quaternary older alluvial fan deposits have been disturbed by previous agricultural activities and soil development to a maximum depth of approximately 4 feet bgs. Therefore, the Quaternary older alluvium in the Project area, as mapped by Morton at al. (2003), has a low paleontological resource potential at the surface due to previous disturbance and soil development, and a high paleontological resource potential below 4 feet bgs. As a result of the high paleontological sensitivity of the Project area, further paleontological resource management is recommended during Project development.

8
FINDINGS AND MANAGEMENT RECOMMENDATIONS

In general, the potential for a given project to result in adverse impacts to paleontological resources is directly proportional to the amount of ground disturbance associated with the project. Since this Project entails the development of a mixed-use development, new ground disturbances are anticipated. Ground disturbance is planned for portions of the Project area that are underlain by sedimentary deposits with a low to high potential for buried paleontological resources. Based on published USGS geologic maps, available literature, and the paleontological field survey, ground disturbances of depths 4 feet and greater bgs, below the poorly developed soil and previous disturbance, may adversely impact paleontological resources in the Project area; therefore, the following management recommendations are set forth. By implementing the management recommendations outlined in the following sections, including worker's environmental awareness training and on-site construction monitoring, adverse impacts to paleontological resources can be reduced to a less than significant level pursuant to the requirements of CEQA. These measures have been used by professional paleontologists for many years and have proven to be effective in reducing or eliminating adverse impacts to paleontological resources as a result of private and public development projects throughout California and elsewhere.

8.1 WORKER'S ENVIRONMENTAL AWARENESS TRAINING

Prior to the start of construction, all field personnel should be briefed regarding the types of fossils that could be found in the Project area and the procedures to follow should paleontological resources be encountered. This training should be accomplished at the pre-grade kick-off meeting or morning tailboard meeting and should be conducted by the Project Paleontologist or his/her representative. Specifically, the training should provide a description of the fossil resources that may be encountered in the Project area, outline steps to follow in the event that a fossil discovery is made, and provide contact information for the Project Paleontologist and on-site monitor(s). The training should be developed by the Project Paleontologist and may be conducted concurrent with other environmental training (e.g., cultural and natural resources awareness training, safety training, etc.).

8.2 PALEONTOLOGICAL MITIGATION MONITORING

Prior to the commencement of ground-disturbing activities, a qualified professional paleontologist will be retained to prepare and implement a Paleontological Resource Impact Mitigation Program (PRIMP) for the Project. Initially, full-time monitoring is recommended for grading and excavation activities 4 feet bgs that will disturb previously undisturbed Quaternary older alluvium (Qof), according to criteria set forth by SVP (2010). Due to soil development and previous agricultural disturbances, monitoring will not be required in Project areas where construction activities disturb native sediments at depths less than 4 feet bgs.

Monitoring will entail the visual inspection of excavated or graded areas and trench sidewalls. In the event that a paleontological resource is discovered, the monitor will have the authority to divert temporarily the construction equipment around the find until it is assessed for scientific

significance and collected. In areas of high sensitivity, monitoring efforts can be reduced or eliminated at the discretion of the Project Paleontologist if no fossil resources are encountered after 50 percent of the excavations are completed, or if buried crystalline bedrock, which has no paleontological resource potential, is encountered at depth within the area of excavation.

8.3 FOSSIL PREPARATION, CURATION, AND REPORTING

Upon completion of fieldwork, all significant fossils collected will be prepared in a properly equipped paleontology laboratory to a point ready for curation. Preparation will include the careful removal of excess matrix from fossil materials and stabilizing and repairing specimens, as necessary. Following laboratory work, all fossils specimens will be identified to the lowest taxonomic level, cataloged, analyzed, and delivered to the Western Science Center for permanent curation and storage. The cost of curation is assessed by the repository and is the responsibility of the Land owner.

At the conclusion of laboratory work and museum curation, a final report will be prepared describing the results of the paleontological mitigation monitoring efforts associated with the Project. The report will include a summary of the field and laboratory methods, an overview of the Project area geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. If the monitoring efforts produced fossils, then a copy of the report will also be submitted to the Western Science Center.

9
CONCLUSIONS

This assessment is based on the results of a museum records search, review of available geologic and paleontologic literature, and a pedestrian survey of exposed geologic units within the Project area. No fossils were observed during the field survey; therefore, only fossils that have already been inventoried or collected are available for this analysis. Based on this analysis, the Project area is underlain by geologic units determined to have high paleontological sensitivity with a high potential for buried fossils resources. These nonrenewable scientific resources may be at risk of being adversely impacted by earth-disturbing activities during the development of the Project. By implementing the management recommendations presented in Chapter 8, adverse impacts to paleontological resources can be reduced to a less than significant level pursuant to the requirements of CEQA.

10
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