PALEONTOLOGICAL ASSESSMENT FOR THE TTM 20544 PROJECT

CITY OF VICTORVILLE
SAN BERNARDINO COUNTY, CALIFORNIA

APN 3071-111-01

Prepared on Behalf of:

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Prepared for:

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August 3, 2023

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Paleontological Database Information

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Report Title:	Paleontological Assessment for the TTM 20544 Project, City of Victorville, San Bernardino County, California
Prepared on Behalf of:	Lilburn Corporation 1905 Business Center Drive San Bernardino, California 92408
Prepared for:	City of Victorville 14343 Civic Drive Victorville, California 92393
Assessor's Parcel Number:	3071-111-01
USGS Quadrangle:	Section 5, Township 4 North, Range 5 West of the USGS *Baldy Mesa*, *California* (7.5-minute) Quadrangle
Study Area:	Approximately 20 acres
Key Words:	Paleontological assessment; Pleistocene alluvial deposits; High sensitivity; City of Victorville.

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I. INTRODUCTION AND LOCATION

A paleontological resource assessment has been completed for the TTM 20544 Project, located east of Verbena Road and bounded by Bear Valley and Sierra roads in the city of Victorville, San Bernardino County, California (Figure 1). The approximately 20-acre project includes Assessor's Parcel Number (APN) 3071-111-01. On the U.S. Geological Survey (USGS) 1:24,000-scale *Baldy Mesa, California* (7.5-minute) topographic quadrangle map, the project is situated in Section 5, Township 4 North, Range 5 West (Figure 2). The project will include the construction of a residential subdivision.

As the lead agency, the City of Victorville has required the preparation of a paleontological assessment to evaluate the project's potential to yield paleontological resources. The paleontological assessment of the project included a review of paleontological literature and fossil locality records in the area, a review of the underlying geology, and recommendations to mitigate impacts to potential paleontological resources, if necessary.

II. REGULATORY SETTING

The California Environmental Quality Act (CEQA), which is patterned after the National Environmental Policy Act, is the overriding regulation that sets the requirement for protecting California's cultural and paleontological resources. CEQA does not establish specific rules that must be followed but mandates that governing permitting agencies (lead agencies) set their own guidelines for the protection of nonrenewable paleontological resources under their jurisdiction.

State of California

Under "Guidelines for Implementation of the California Environmental Quality Act," as amended in December 2018 (California Code of Regulations [CCR] Title 14, Division 6, Chapter 3, Sections 15000 et seq.), procedures define the types of activities, persons, and public agencies required to comply with CEQA. Section 15063 of the CCR provides a process by which a lead agency may review a project's potential impact to the environment, whether the impacts are significant, and provide recommendations, if necessary.

In CEQA's Environmental Checklist Form, one of the questions to answer is, "would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (Appendix G, Section VII, Part f). This is to ensure compliance with California Public Resources Code Section 5097.5, the law that protects nonrenewable resources including fossils, which is paraphrased below:

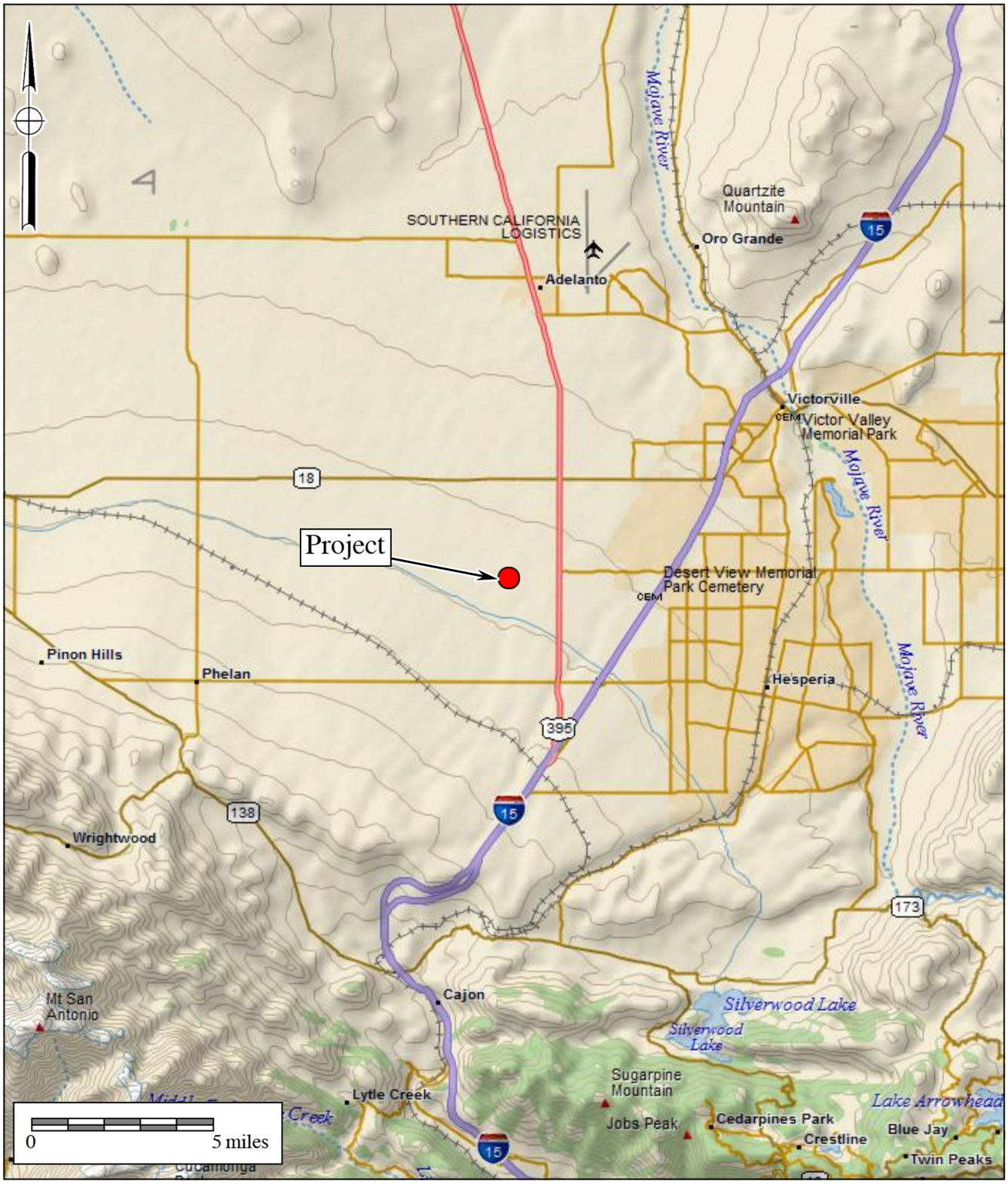

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Figure 1

General Location Map

The TTM 20544 Project

DeLorme (1:250,000 series)

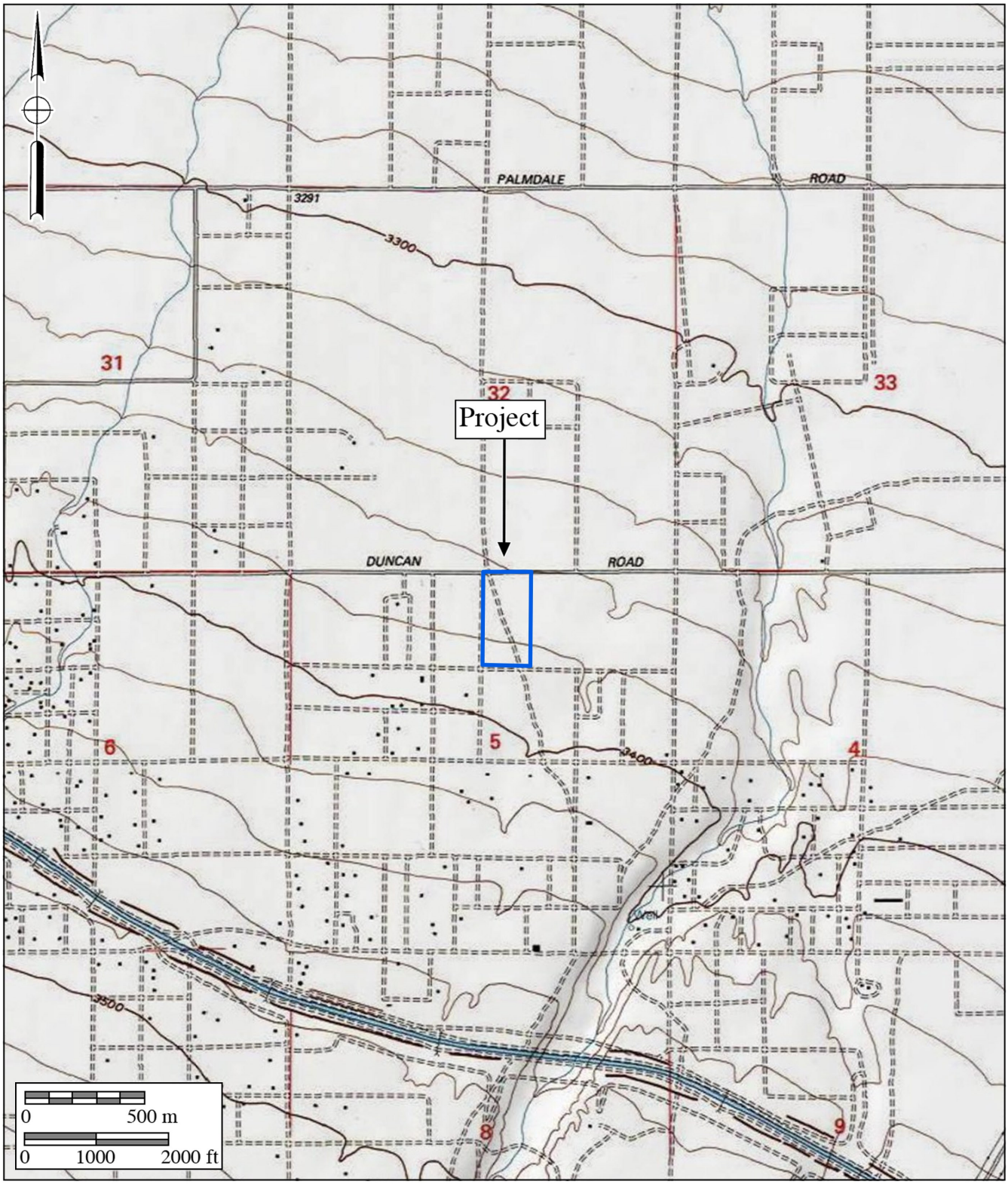

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Figure 2

Project Location Map

The TTM 20544 Project

USGS *Baldy Mesa* Quadrangle (7.5-minute series)

a) A person shall not knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands.
b) As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.
c) A violation of this section is a misdemeanor.

City of Victorville

In the Final Environmental Impact Report (EIR) of the City of Victorville General Plan, paleontological resource mitigation measures are specified in CUL-1. For previously undeveloped properties greater than one acre, mitigation measure CUL-1 must be implemented before construction starts (City of Victorville 2008a). The measure is as follows:

> CUL-1: The applicant shall provide for an on-site paleontological/archaeological inspector to monitor all grading operations, or a letter from said licensed professional indicating that monitoring is not necessary during grading. Further, if disturbed resources are required to be collected and preserved, the applicant shall be required to participate financially up to the limits imposed by Public Resources Code Section 21083.2. The results of said monitoring shall be filed with the Development Director or his designee prior to the final approval of the development. (City of Victorville 2008a)

III. GEOLOGY

The project is situated over the Victorville Basin, a structural depression about 40 kilometers wide and filled with sediments up to 1,300 meters thick, a succession of deposits ranging in age from middle Miocene through late Pleistocene time. The Victorville Basin is bordered by the San Gabriel and San Bernardino Mountains to the south, and along the north, local peaks and ridges of pre-Cenozoic basement rocks in the areas of Quartzite Mountain and the southeastern Shadow Mountains. These deposits record the erosional and depositional cycles of the region during episodes of crustal slip along the San Andreas Fault, along with the coeval uplift and trans-rotation of the San Bernardino and San Gabriel Mountains. A major feature of the area is the evolution of the northward-flowing ancestral Mojave River. Between the Cajon Pass and Victorville, and at the project, the main geomorphic attribute of the surface is the Victorville Fan, a broad piedmont or bajada. The fan was active between roughly one-half million years to about

middle to late Pleistocene times (Cox et al. 2003).

As shown on Figure 3 (after Morton and Miller 2006), the project overlies middle Holocene young alluvial fan deposits, Unit 3 (pale gray areas labeled "Qyf_3"). The fan deposits are composed of homogeneous brown silts and sands with sparse granule and pebble lenses and scattered, matrix-supported, pebble-sized clasts. The fan surfaces are slightly to moderately dissected, and locally show low amplitude, rolling surfaces with swales and ridges parallel to the axes of the fans (Morton and Miller 2006). In the attached paleontological records search for the project, the Holocene alluvial deposits are as little as three feet thick in the area and are underlain by Pleistocene-aged alluvial deposits that may contain fossils (Kottkamp 2022).

Approximately five miles east of the project are deposits of the Pleistocene and Pliocene-aged "alluvium of the ancestral Mojave River" (Hernandez et al. 2008). The current configuration of the Mojave River has developed gradually over a span of at least one million years. About 60 to 70 thousand years ago, the ancestral Mojave River began incising its modern canyon between Victorville and Barstow. The upper unit of the ancient Mojave River depositional sequence is approximately middle Pleistocene in age, based on terrestrial vertebrate fossils (Cox et al. 2003).

IV. PALEONTOLOGICAL RESOURCES

Definition

Paleontological resources are the remains of prehistoric life that have been preserved in geologic strata. These remains are called fossils and include bones, shells, teeth, and plant remains (including their impressions, casts, and molds) in the sedimentary matrix, as well as trace fossils such as footprints and burrows. Fossils are considered older than 5,000 years of age (Society of Vertebrate Paleontology [SVP] 2010) but may include younger remains (subfossils) when viewed in the context of local extinction of the organism or habitat, for example. Fossils are considered a nonrenewable resource under state and local guidelines (see Section II of this report).

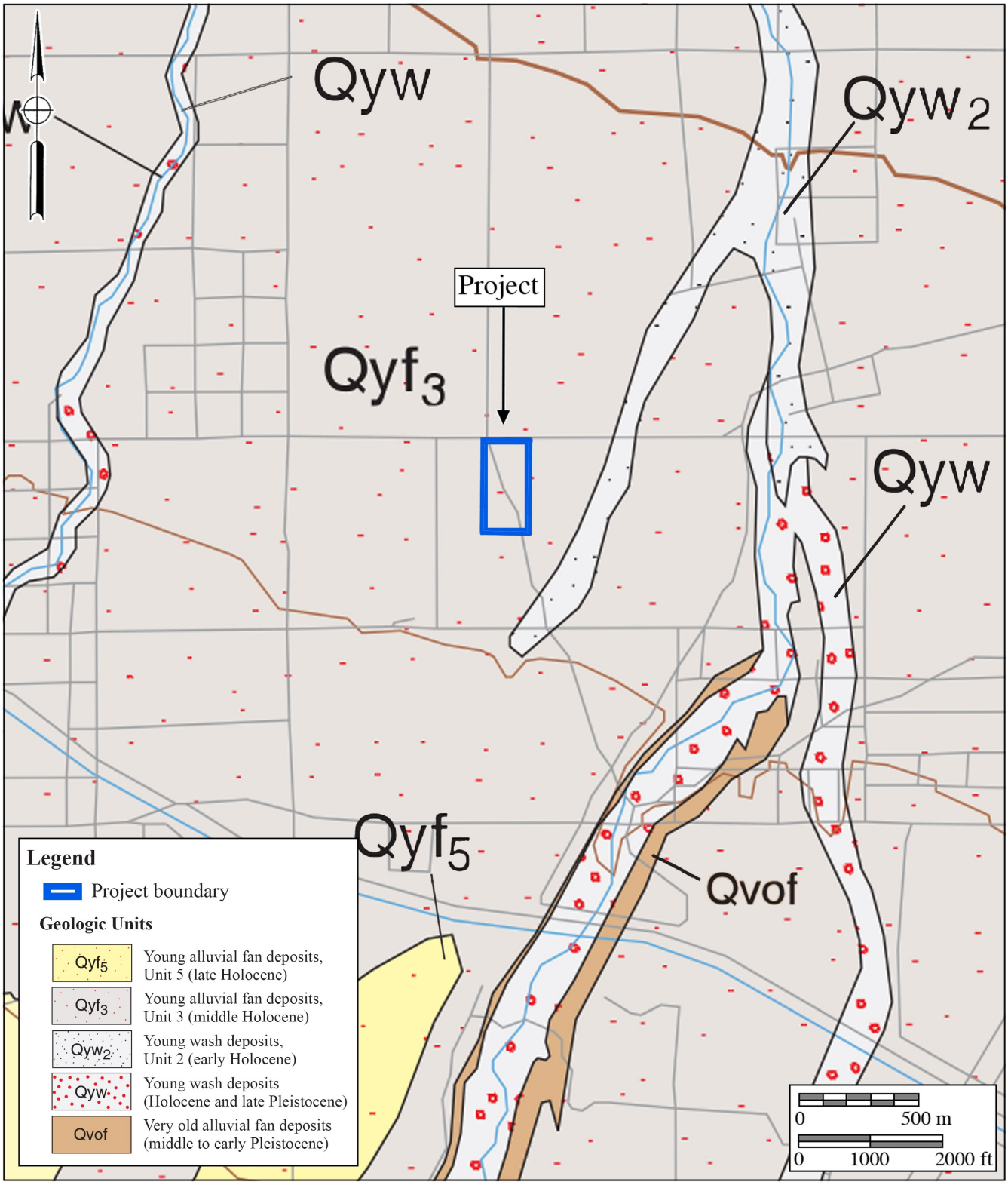

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Figure 3

Geologic Map

The TTM 20544 Project

Geology after Morton and Miller (2006)

Fossil Locality Search

A paleontological resource locality search was performed for a previous nearby project by the Division of Earth Sciences at the San Bernardino County Museum (SBCM), called the Luna and Fremontia Project (Kottkamp 2022; Appendix B). The Luna and Fremontia Project is located about one-and-a-half miles northeast of the TTM 20544 Project. The locality search indicated that there are no fossil localities within the current project. The closest locality is located approximately 1.25 miles east of the current project, consisting of Pleistocene rodent teeth and indeterminate mammalian remains (SBCM locality numbers [locs.] 1.114.209, 1.114.210, and 1.114.211). Approximately three-and-a-half miles northeast of the current project, at Silverado High School, more rodent teeth with large mammal bones, along with land/freshwater snails, were recovered during mitigation monitoring (SBCM locs. 1.114.252 to 1.114.255). Farther northeast, multiple localities, mostly of Pleistocene rodent remains, were recovered (SBCM locs. 1.115.1 to 1.115.7 and 1.115.11). Kottkamp (2022) indicated that, while depths of these fossil localities are not precisely known, the deposits that contain the fossils are buried beneath a relatively thin surficial veneer of soil and Holocene deposits.

A review of published and unpublished literature was conducted for potential paleontological resources that are known in the vicinity of the project. The sources reviewed did not indicate the presence of any known fossil localities within the project. However, in the greater Victorville area, there are many recorded Pleistocene vertebrate fossil localities (Jefferson 1986, 1991, 2009; Cox et al. 2003; Romero and Hillburn 2006; City of Victorville 2008b; Reynolds and Reynolds 1994; and several sources by R.E. Reynolds not available for review). Most of the specimens and records recovered from these localities are held by the SBCM. All the localities from these sources are derived from the alluvium of the ancestral Mojave River as mapped by Hernandez et al. (2008) and Cox et al. (2003), and are several miles east and north of the project.

Field Survey

BFSA Environmental Services, a Perennial Company (BFSA), staff, under the supervision of paleontological principal investigator Todd A. Wirths, conducted a site visit on July 21, 2023. The survey included a careful inspection of all exposed ground surfaces, including any rodent burrows and disturbed areas. The survey of the property was an intensive reconnaissance consisting of a series of parallel survey transects spaced at approximately 15-meter intervals. The entire property was accessible, with visibility characterized as excellent. Vegetation primarily consisted of creosote bushes, rubber rabbitbrush, and Joshua Trees. The survey confirmed that the project site had been previously cleared and leveled. No paleontological resources, or evidence of paleontological resources, were identified as a result of the survey.

V. PALEONTOLOGICAL SENSITIVITY

Overview

The degree of paleontological sensitivity of any particular area is based on a number of factors, including the documented presence of fossiliferous resources on a site or in nearby areas, the presence of documented fossils within a particular geologic formation or lithostratigraphic unit, and whether or not the original depositional environment of the sediments is one that might have been conducive to the accumulation of organic remains that might have become fossilized over time. Holocene alluvium is generally considered to be geologically too young to contain significant nonrenewable paleontological resources (*i.e.*, fossils) and is therefore typically assigned a low paleontological sensitivity. Pleistocene (greater than 11,700 years old) alluvial and alluvial fan deposits in the Inland Empire and Mojave Desert, however, often yield important Ice Age terrestrial vertebrate fossils, such as extinct mammoths, mastodons, giant ground sloths, extinct species of horse, bison, and camel, saber-toothed cats, and others (Jefferson 1991). Therefore, these Pleistocene sediments are accorded a high paleontological resource sensitivity.

Professional Standards

The SVP has drafted guidelines that include four categories of paleontological sensitivity for geologic units (formations) that might be impacted by a proposed project, as paraphrased below:

- *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, and that further study is needed to determine the potential of the rock unit.
- *Low Potential:* Rock units that are poorly represented by fossil specimens in institutional collections or based on a general scientific consensus that 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.

Using these criteria, based on the presence of nearby significant fossil localities and potential for buried Pleistocene deposits to underlie thin, surficial Holocene alluvial deposits at the project, the project may be considered to have a high potential to yield paleontological resources.

City of Victorville Assessment

Section 5.5.1.2 of the City of Victorville's Draft EIR for the General Plan (City of Victorville 2008b) describes the paleontologic resources within the city. Based on Pleistocene vertebrate fossils recovered from sediments deposited by the ancestral Mojave River, areas

mapped as such are assigned a "moderate to high sensitivity" for the potential to yield significant paleontological resources (City of Victorville 2008b [Sections 5.5-29, 5.5-30]).

In Section 5.5.4, "Project Impacts," of the Draft EIR, mitigation of potentially significant impacts to significant nonrenewable resources is required if identified in program-level paleontological assessments. Implementation Measure 5.1.2.4 "Require[s] paleontologic monitoring of land alteration projects involving excavation into native geologic materials known to have a high sensitivity for the presence of paleontologic resources" (City of Victorville 2008b [Section 5.5-22]).

VI. CONCLUSIONS AND RECOMMENDATIONS

Research has confirmed the existence of potentially fossiliferous Pleistocene-aged alluvial fan deposits that are likely present in the shallow subsurface of the project. These alluvial fan deposits and the known occurrence of significant terrestrial vertebrate fossils at shallow depths from the Pleistocene deposits in the vicinity of the project support that paleontological monitoring be implemented during mass grading and excavation activities in undisturbed alluvial deposits in order to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources. Full-time monitoring of undisturbed alluvial deposits at the project is warranted starting at the surface.

A Paleontological Resource Impact Mitigation Program (PRIMP) report that outlines a proposed mitigation monitoring plan at the project is recommended for submittal and approval by the City of Victorville. The PRIMP should be based on the findings stated above. A PRIMP for the project is outlined below:

PRIMP Elements

1. All mitigation programs should be performed by a qualified professional (project) paleontologist, defined as an individual with an M.S. or Ph.D. in paleontology or geology who has proven experience in San Bernardino County paleontology and who is knowledgeable in professional paleontological procedures and techniques. Fieldwork may be conducted by a qualified paleontological monitor, defined as an individual who has experience in the collection and salvage of fossil materials. The paleontological monitor shall always work under the direction of a qualified paleontologist.
2. Monitoring of mass grading and excavation activities shall be performed by a qualified paleontologist or paleontological monitor. Full-time monitoring for paleontological resources from the surface will be conducted in areas where grading, excavation, or drilling activities occur in undisturbed alluvium of the Victorville Fan to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources. Monitoring is not warranted in disturbed soils, such as artificial fill.
3. Paleontological monitors will be equipped to salvage fossils as they are unearthed to

avoid construction delays and to remove samples of sediment that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt or divert equipment to allow for the removal of abundant or large specimens in a timely manner. The monitor shall notify the project paleontologist, who will then notify the concerned parties of the discovery. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface or, if they are present, are determined upon exposure and examination by qualified paleontological personnel to have low potential to contain fossil resources.

4. Preparation of recovered specimens to a point of identification and permanent preservation will be conducted, including screen washing sediments to recover small vertebrates and invertebrates if indicated by the results of test sampling. Preparation of any individual vertebrate fossils is often more time-consuming than for accumulations of invertebrate fossils.
5. All fossils must be deposited in an accredited institution (university or museum) that maintains collections of paleontological materials. The San Bernardino County Museum in Redlands, California, is the preferred institution by the County of San Bernardino. All costs of the paleontological monitoring and mitigation program, including any one-time charges by the receiving institution, are the responsibility of the developer.
6. Preparation of a final monitoring and mitigation report of findings and significance will be completed, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location(s). A letter documenting receipt and acceptance of all fossil collections by the receiving institution must be included in the final report. The report, when submitted to and accepted by the appropriate lead agency (*e.g.,* the City of Victorville), will signify satisfactory completion of the project program to mitigate impacts to any nonrenewable paleontological resources.

VII. CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this paleontological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief and have been compiled in accordance with CEQA criteria.

August 3, 2023

Todd A. Wirths
Senior Paleontologist
California Professional Geologist No. 7588

Date

VIII. REFERENCES

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Society of Vertebrate Paleontology. 2010. Standard procedures for the assessment and mitigation of adverse impacts to paleontological resources; by the SVP Impact Mitigation Guidelines Revision Committee: https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines-1.pdf.

APPENDIX A

Qualifications of Key Personnel

Todd A. Wirths, MS, PG No. 7588

Senior Paleontologist

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BFSA Environmental Services
A Perennial Company

Education

Master of Science, Geological Sciences, San Diego State University, California **1995**

Bachelor of Arts, Earth Sciences, University of California, Santa Cruz **1992**

Professional Certifications

California Professional Geologist #7588, 2003
Riverside County Approved Paleontologist
San Diego County Qualified Paleontologist
Orange County Certified Paleontologist
OSHA HAZWOPER 40-hour trained; current 8-hour annual refresher

Professional Memberships

Board member, San Diego Geological Society
San Diego Association of Geologists; past President (2012) and Vice President (2011)
South Coast Geological Society
Southern California Paleontological Society

Experience

Mr. Wirths has more than a dozen years of professional experience as a senior-level paleontologist throughout southern California. He is also a certified California Professional Geologist. At BFSA, Mr. Wirths conducts on-site paleontological monitoring, trains and supervises junior staff, and performs all research and reporting duties for locations throughout Los Angeles, Ventura, San Bernardino, Riverside, Orange, San Diego, and Imperial Counties. Mr. Wirths was formerly a senior project manager conducting environmental investigations and remediation projects for petroleum hydrocarbon-impacted sites across southern California.

Selected Recent Reports

2019 *Paleontological Assessment for the 10575 Foothill Boulevard Project, City of Rancho Cucamonga, San Bernardino County, California*. Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Assessment for the MorningStar Marguerite Project, Mission Viejo, Orange County, California.* Prepared for T&B Planning. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Monitoring Report for the Nimitz Crossing Project, City of San Diego.* Prepared for Voltaire 24, LP. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Resource Impact Mitigation Program (PRIMP) for the Jack Rabbit Trail Logistics Center Project, City of Beaumont, Riverside County, California.* Prepared for JRT BP 1, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Monitoring Report for the Oceanside Beachfront Resort Project, Oceanside, San California.* Prepared for S.D. Malkin Properties. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Impact Mitigation Program for the Nakase Project, Lake Forest, Orange County, San California.* Prepared for Glenn Lukos Associates, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Impact Mitigation Program for the Sunset Crossroads Project, Banning, Riverside County*. Prepared for NP Banning Industrial, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Assessment for the Ortega Plaza Project, Lake Elsinore, Riverside County*. Prepared for Empire Design Group. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Record Search Update for the Green River Ranch III Project, Green River Ranch Specific Plan SP00-001, City of Corona, California*. Prepared for Western Realco. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Assessment for the Cypress/Slover Industrial Center Project, City of Fontana, San Bernardino County, California*. Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Monitoring Report for the Imperial Landfill Expansion Project (Phase VI, Segment C-2), Imperial County, California*. Prepared for Republic Services, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Assessment for the Manitou Court Logistics Center Project, City of Jurupa Valley, Riverside County, California*. Prepared for Link Industrial. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Resource Impact Mitigation Program for the Del Oro (Tract 36852) Project, Menifee, Riverside County*. Prepared for D.R. Horton. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Assessment for the Alessandro Corporate Center Project (Planning Case PR-2020-000519), City of Riverside, Riverside County, California*. Prepared for OZI Alessandro, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Monitoring Report for the Boardwalk Project, La Jolla, City of San Diego*. Prepared for Project Management Advisors, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

APPENDIX B

Paleontological Records Search

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www.SBCounty.gov

SAN BERNARDINO COUNTY

Museum
Division of Earth Science

Scott Kottkamp
Curator of Earth Science

27 May, 2022

Brian F. Smith & Associates, Inc.
Attn: Todd Wirths
14010 Poway Road, Suite A
Poway, CA 92064

PALEONTOLOGY RECORDS REVIEW for proposed Luna and Fremontia (TM 20527) Project, Victorville, San Bernardino County, California

Dear Mr. Wirths,

The Division of Earth Science of the San Bernardino County Museum (SBCM) has completed a records search for the above-named project in San Bernardino County, California. The proposed project site (Luna and Fremontia, TM 20527) is in the City of Victorville, California as shown on the United States Geological Survey (USGS) 7.5 minute Baldy Mesa, California quadrangle.

Geologic mapping of that region done by Dibblee and Minch (2008a, 2008b) indicates the entire project area is located atop recent alluvial surficial deposits of Holocene age (Qa). These sediments are comprised of unconsolidated mixed sand, silt, and gravel, often covered by soil. These deposits are unlikely to be fossiliferous themselves, but directly overlie ~1.8 million to ~11,000 year old Pleistocene alluvial deposits (Qoa) that are. Where exposed at the surface east of the project site, Qoa is composed mostly of tan to light red weakly indurated sand near the banks of the Mojave River to the northeast (Dibblee and Minch, 2008b). This surficial Qoa grades to brown and gray in a vast plain, west of the river and southeast of the project site, towards Hesperia (Dibblee and Minch, 2008a). Despite these generalities, the composition, color, and depth of Qoa varies vertically and laterally, especially when found in the subsurface. Green-grey silt or clay are common, and the contact between Qa and Qoa in Victorville and Adelanto lies as little as 3 feet below the surface. Such older alluvial deposits have been found to be highly

fossiliferous in the local area, yielding the remains of mammoth, mastodon, camels, and horses, as well as microfossils including rodents (Reynolds and Springer, 1991). Rancholabrean age fossils can be distinguished from Irvingtonian ones via both biostratigraphy and degree of digenetic alteration – the youngest Rancholabrean specimens are subfossils and degree of diagenetic alteration generally scales with age. In the Adelanto region, Qoa in turn unconformably overlies the Miocene age Tropico Group, which is also fossiliferous (Dames and Moor, Inc., 1995). Below the Tropico Group are igneous and metamorphic units of Jurassic or older age (Dibblee and Minch, 2008b).

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. Nor have any paleontological resources been found within 1 mile of the project site's perimeter. Many fossil localities, however, are located within 5 miles and the same Qa and Qoa sediments as the project site. An abbreviated summary of these sites is provided below, to convey the highly fossiliferous nature of the area and to give a fuller understanding of the types of fossils present.

The closest fossil localities, SBCM 1.114.209, SBCM 1.114.210, and SBCM 1.114.211 are located approximately 1.5 – 1.6 miles southeast of the project site. Localities occur within Qoa units of grey-brown sand and green silt. No description of the depth at which fossils were found was provided in the records. Taxa present at these localities include *Perognathus* sp., indeterminate Mammalia, and indeterminate Chordata. *Perognathus* sp. is represented by teeth, while the indeterminate taxa are present as permineralized bone fragments.

Localities SBCM 1.114.252 – 1.114.255 were uncovered via paleontological mitigation monitoring during the construction of Silverado High School, 2.2 miles east northeast of the project site. Fossils were uncovered during construction grading and excavation of the school's foundation within Qoa. No description of the sediment or the depth at which fossils were found was provided in the records. Specimens collected from these localities include: unidentified conispiral and planispiral gastropod shells; *Thomomys bottae* LP4/; *Perognathus* sp. metapodials; enamel fragments; and bone fragments of an indeterminate large mammal. The large mammalian bone fragments appear heavily abraded and have a chalky color and texture, but the smaller rodent bones and teeth are well preserved.

SBCM localities 1.115.1 – 1.115.7 and 1.115.11 are arranged in a line running south-southeast, approximately 2.4 miles northeast to 4 miles north-northeast from the project site. These sites were uncovered during the excavation of foundations for transmission line towers. Permineralized mammal bones were discovered at these sites within the same older alluvium (Qoa) underlying the proposed project site. The contact between Qa and Qoa occurs as little as

3 feet below the surface, where Qoa takes the form of mixed green to buff colored fine sand, silt, and clay. The nature of the Qoa varies both laterally and with depth; at SBCM 1.115.11, 9 feet below the surface, Qoa was an orange-grey poorly sorted silt containing subangular gravel and caliche. Because of the excavation's nature, fossils were recovered from the spoils pile of dredged up sediments during augering. Thus, precise depths and most taphonomic data are unknown, though the deepest pit to produce fossils was 14 feet deep at the time (Reynolds and Springer, 1991). Specimens collected from these sites were either subfossils or preserved via permineralization, and include: *Crotalus* sp. vertebrae; Colubridae vertebra; Lacertilia distal tibia; bone fragments and a tarsal phalanx of small Aves; Camelidae tooth fragments (m/x, Mx/); indeterminate Artiodactyla enamel fragments; *Lepus* sp. radius and calcaneum; *Sylvilagus* sp. I1/ fragment; *Thomomys* sp. premaxillae, dentary and horizontal ramus with aveolar wall (i/1, m/x); *Perognathus* sp. R dentary fragment with i/1; *Perognathus* sp. LI1/ and RI1/; *Dipodomys* sp. LI1/, 4 indeterminate cheek teeth (p/x, Px/, m/x, or Mx/), L dentary fragment, and R proximal femur; Rodentia i/1; and a 1st phalanx, ungula phalanx, caudal vertebra, enamel fragments, and three long bone fragments from indeterminate Chordata. Another site associated with the transmission line project, SBCM 1.115.9, turned up indeterminate microfossil bone fragments within Qoa 3.4 miles northwest of the project area (Reynolds and Springer, 1991).

Finally, construction monitoring during subdivision construction within an area 3.5 – 4.5 miles northeast from the proposed project site uncovered 70 paleontological localities situated within Qoa several feet beneath the surface. Localities include SBCM 1.114.56 – 1.114.90, SBCM 1.114.93 – 1.114.97, SBCM 1.114.131 – 1.114.46, SBCM 1.114.160 – 1.114.65, SBCM 1.114.206 – 1.114.208, and SBCM 1.114.290 – 294. Localities occur in Qoa of variable composition, varying from wet dark yellow clay, to red sandy silt, to green silt with clasts of clay and caliche, to grey sand and gravel lenses dispersed within the other units. This Qoa is buried shallowly below a thin veneer of soil and Qa. The fossil assemblage consists of microfossils, bone fragments, and insect burrow traces; mode of preservation is permineralization for bone and casts for burrow traces. Taxa found at these localities include: indeterminate Plantae pollen; insect burrow traces; *Bufo* sp.; indeterminate Anura; *Coleonyx variegatus*; *Cnemidophorus* cf. *tigris*; *Callisaurus draconoides*; *Crotaphytus* sp.; Gambelia sp.; *Phrynosoma* sp.; *Sceloporus* sp.; *Uta stansburiana*; indeterminate Iguanidae; indeterminate Lacertilia; *Crotalus* sp.; indeterminate Colubridae; indeterminate Aves; *Lepus* sp.; *Sylvilagus* sp.; indeterminate Leporidae; *Microtus* sp.; *Neotoma* sp.; indeterminate Cricetidae; *Thomomys bottae*; *Thomomys* sp.; *Dipodomys* sp.; *Perognathus* sp.; *Ammospermophilus leucurus*; cf. *Otospermophilus variegatus*; indeterminate Sciuridae; and various indeterminate bone and enamel fragments.

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

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