

# PALEONTOLOGICAL ASSESSMENT FOR THE JOSHUA TREE ESTATES PROJECT

COMMUNITY OF JOSHUA TREE,  
SAN BERNARDINO COUNTY, CALIFORNIA

APN 0605-051-01

**Prepared for:**

Home Paradise Realty Group, Inc.  
10392 Klingerman Street, Suite C  
El Monte, California 91733

**Submitted to:**

County of San Bernardino  
385 North Arrowhead Avenue  
San Bernardino, California 92415

**Prepared by:**

Todd A. Wirths, M.S., P.G., Senior Paleontologist,  
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*May 31, 2023*



**BFSA Environmental Services**  
A Perennial Company

## **Paleontological Database Information**

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***Report Date:*** May 31, 2023

***Report Title:*** Paleontological Assessment for the Joshua Tree Estates Project,  
Community of Joshua Tree, San Bernardino County, California

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***USGS Quadrangle:*** Section 20, Township 1 North, Range 7 East, *Joshua Tree North,*  
*California* (7.5-minute) USGS Quadrangle

***Assessor's Parcel Numbers:*** 0605-051-01

***Study Area:*** 82.1 acres

***Key Words:*** Paleontological assessment; coarse Holocene and Pleistocene  
alluvial deposits; low to undetermined paleontological resource  
sensitivity; monitoring is not recommended.

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## **I. INTRODUCTION AND LOCATION**

A paleontological resource assessment has been completed for the Joshua Tree Estates Project, bounded by East Broadway, Laferney Avenue, and Sunever Road, in the Joshua Tree neighborhood of unincorporated San Bernardino County, California (Figures 1 and 2). The 82.1-acre project consists of one parcel (Assessor's Parcel Number 0605-051-01) situated about two miles north of State Route 62, north of Joshua Tree National Park, in Section 20, Township 1 North, Range 7 East, of the U.S. Geological Survey (7.5-minute) *Joshua Tree North, California* quadrangle (Figure 2). The project proposes the subdivision of the property into 29 residential lots ranging in size between 2.01 and 2.36 acres, along with 11 acres dedicated for road development and improvements.

As the lead agency, the County of San Bernardino 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.

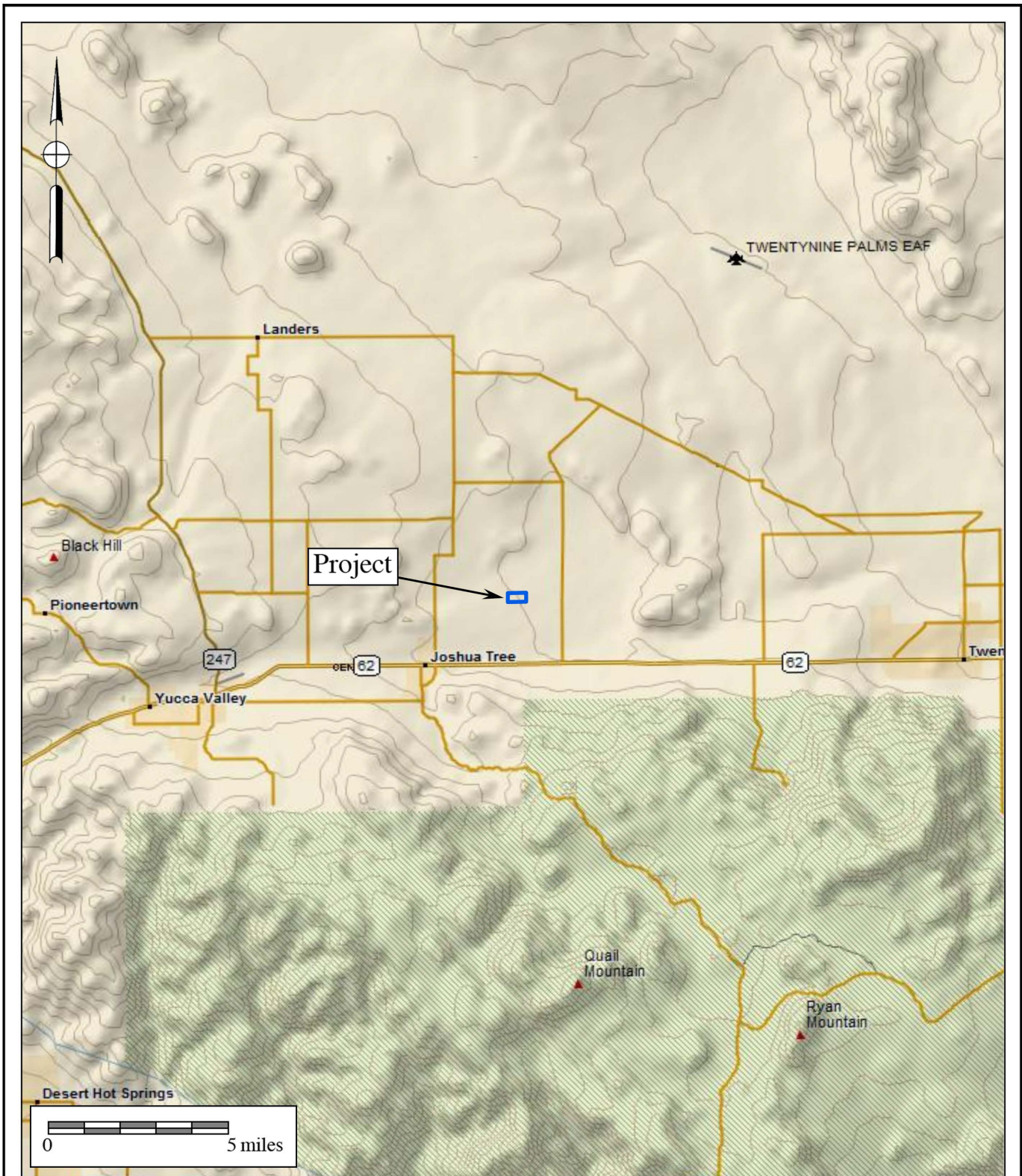
## **II. REGULATORY SETTING**

The California Environmental Quality Act (CEQA), which is patterned after the National Environmental Policy Act, is the overriding environmental policy that sets the requirement for protecting California's paleontological resources. CEQA mandates that governing permitting agencies (lead agencies) set their own guidelines for the protection of nonrenewable paleontological resources under their jurisdiction.

### *State of California*

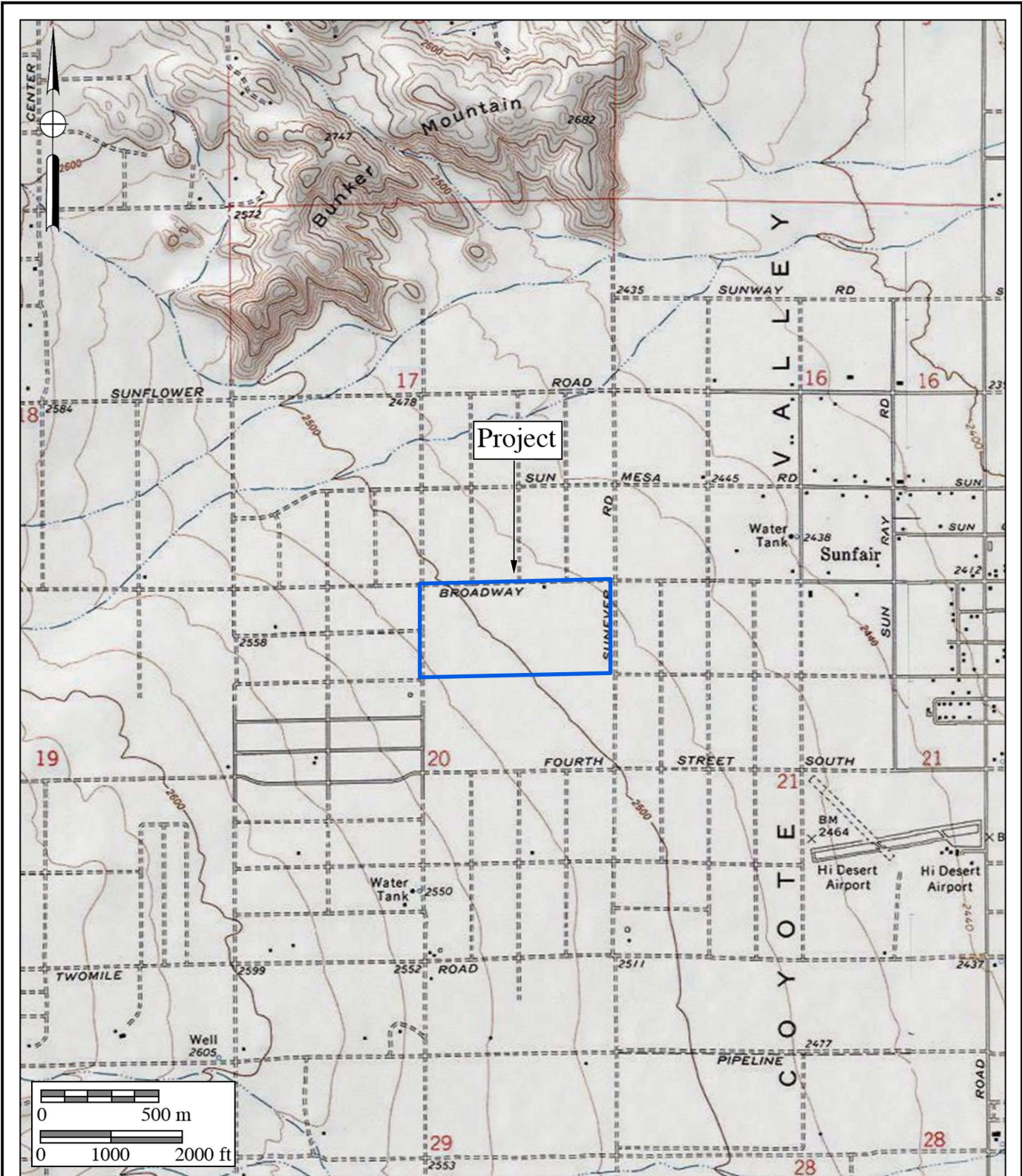
Under "Guidelines for Implementation of the California Environmental Quality Act," as amended in December 2018 (California Code of Regulations [CCR] Title 14, Division 6, Chapter 3, Sections 15000 et seq.), procedures define the types of activities, persons, and public agencies required to comply with CEQA. Section 15060 of State CEQA Guidelines 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 stated below:



**Figure 1**  
**General Location Map**  
 The Joshua Tree Estates Project  
 DeLorme (1:250,000 series)





**Figure 2**  
**Project Location Map**

The Joshua Tree Estates Project  
 USGS Joshua Tree North Quadrangle (7.5-minute series)



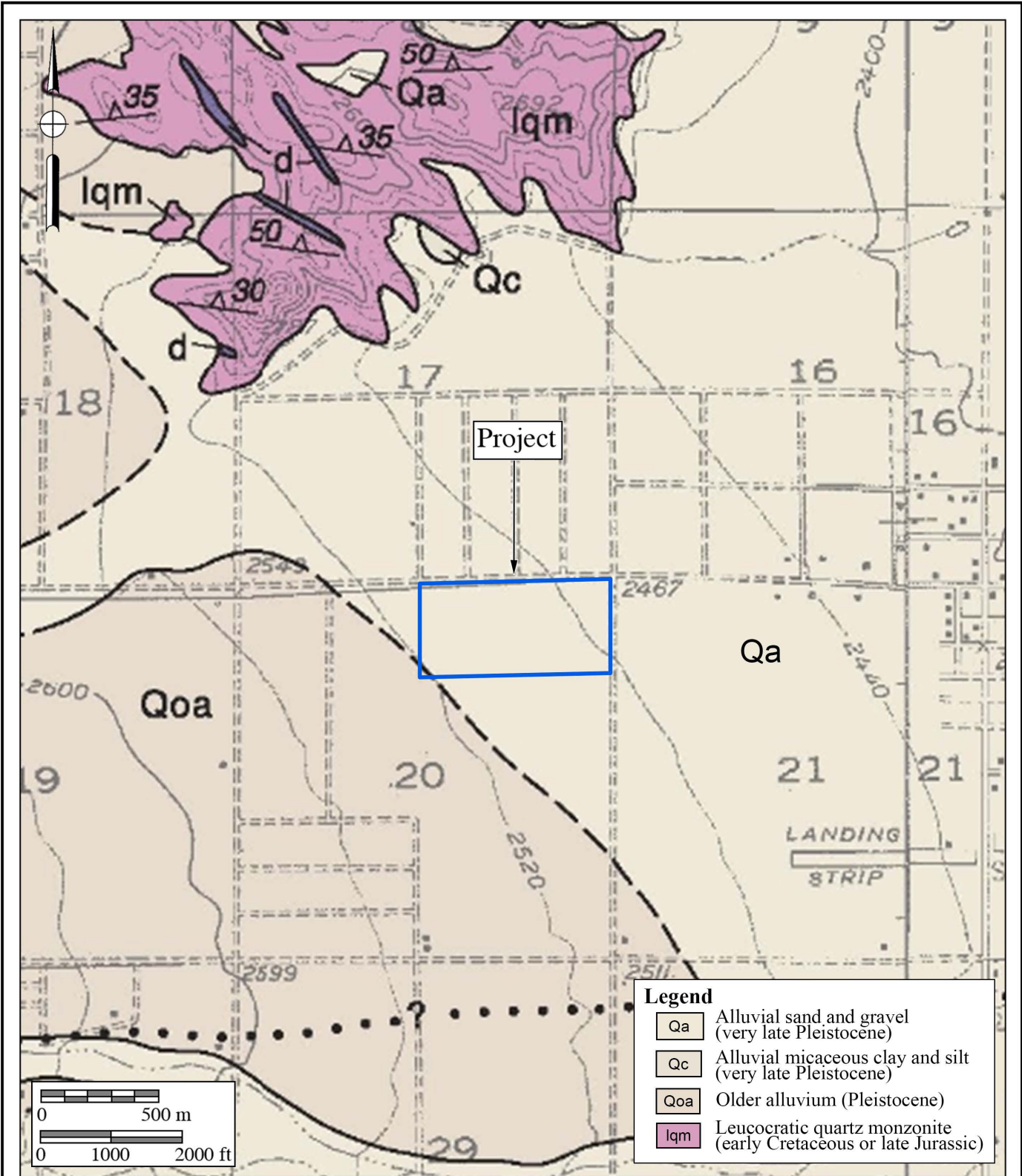
- a) A person shall not knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, 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, punishable by a fine not exceeding ten thousand dollars (\$10,000), or by imprisonment in a county jail not to exceed one year, or by both that fine and imprisonment.

*County of San Bernardino*

The County of San Bernardino 2007 Development Code has developed criteria for applying guidelines to preserve and protect nonrenewable paleontological resources (County of San Bernardino 2019). In Chapter 82.20, “Paleontologic Resources (PR) Overlay,” of the Development Code, Purpose, Location Requirements, Development Standards, and Paleontologist Qualifications are described in Sections 82.20.010 through 82.20.040, respectively (County of San Bernardino 2019).

**III. GEOLOGY**

Regionally, the project lies within Coyote Valley, a small valley surrounded by granitic hills and small peaks, including Bunker Mountain (north of the project), the Bartlett Mountains (west), Copper Mountain (east), and the Little San Bernardino Mountains (south). Ephemeral washes divide the hills. As shown on the geologic map by Thomas Dibblee (2008), most of the project occupies Holocene-aged alluvium (area represented by the symbol “Qa” on Figure 3). The Holocene alluvium is composed of gravel, sand, silt, and clay occupying the valley within the last 11,700 years. The southwestern corner of the project is mapped as Pleistocene-aged older alluvium (area labeled “Qoa” on Figure 3), consisting of gravels and sand. The older alluvial deposits underlie the younger Holocene deposits at the project at unknown, but likely variable, depths. The age of the older alluvial deposits is estimated anywhere between 11,700 years to perhaps as much as two million years old.



**Figure 3**  
**Geologic Map**

The Joshua Tree Estates Project  
Geology after Dibblee (2008)

## **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 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 (Section II of this report).

### Fossil Locality Record Search

A paleontological literature review and collections and locality records search was conducted for the project by the Division of Geological Sciences at the San Bernardino County Museum (Kottcamp 2023 [Attachment B]). The closest-known fossil locality in a similar geologic setting as the project is located 3.1 miles to the southeast, consisting of a Pleistocene-aged rodent humerus recovered from screen washing collection techniques (Kottcamp 2023). The area of the fossil locality is mapped by Dibblee (2008) as Pleistocene old alluvium.

Based on published literature (Jefferson 1986), other, more distant fossil localities occur to the east within Twentynine Palms, east of Mesquite Lake, consisting of the bones and teeth from a diverse Pleistocene megafauna from fluvial sands and gravels. In another locality north of the project, in the area of Surprise Springs, bison, horse, llama, and camel remains were discovered.

## **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 thus typically assigned a low paleontological sensitivity. Pleistocene (over 11,700 years old) alluvial and alluvial fan deposits in the Mojave Desert and the Inland Empire, however, often yield important terrestrial vertebrate fossils, such as extinct mammoths, mastodons, giant ground sloths, extinct species of horse, bison, camel, saber-toothed cats, and others (Jefferson 1991). These Pleistocene sediments are thus accorded a high paleontological resource sensitivity.

Professional Standards

The Society of Vertebrate Paleontology (2010) has drafted guidelines that include four categories of paleontological sensitivity for geologic units (formations) that might be impacted by a proposed project, as listed 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, given the young age and coarse composition of the Holocene-aged deposits at the project, the Holocene alluvium has a low paleontological resource potential (Kottcamp 2023). Based upon the lack of nearby significant fossil localities and the coarse nature of the Pleistocene-aged deposits mapped at the project, the Pleistocene deposits may be considered to have an undetermined paleontological resource potential.

County of San Bernardino Assessment

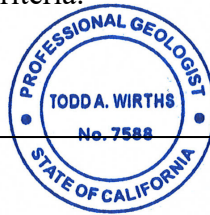
The County of San Bernardino applies its PR Overlay guideline to those areas where paleontological resources are known to occur or are likely to be present, by using fossil location criteria reported by the San Bernardino County Museum, the University of California Museum of Paleontology (Berkeley), the Los Angeles County Natural History Museum, or other institutions (County of San Bernardino 2019, Section 82.20.020). Since a low to undetermined paleontological resource sensitivity has been, and can be, applied to the geologic strata beneath the project (Society of Vertebrate Paleontology 2010), and no known significant fossil resources have been found in the area of the project (Section IV, and above), the application of the County's PR Overlay criteria (Section 82.20.030) does not appear necessary (County of San Bernardino 2019).

## **VI. CONCLUSIONS AND RECOMMENDATIONS**

The existence of mostly young alluvial deposits rocks at the project, and the lack of any known significant fossil specimens or fossil localities from within three miles of the subject property, and the shallow earth disturbance activities typically required for this type of development support the recommendation that paleontological monitoring *not* be required at the Joshua Tree Estates Project. A paleontological resource impact mitigation program does not appear warranted.

## **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.



May 31, 2023

Date

Todd A. Wirths

Senior Paleontologist

California Professional Geologist No. 7588

## **VIII. REFERENCES**

County of San Bernardino. 2019. County of San Bernardino 2007 Development Code. Prepared for the County of San Bernardino Land Use Services Division by several consultants. Adopted March 13, 2007; effective April 12, 2007; amended May 2, 2019. Electronic document, <http://www.sbcounty.gov/Uploads/lus/DevelopmentCode/DCWebsite.pdf>.

Dibblee, T.W., Jr. 2008. Geologic Map of Joshua Tree and Twentynine Palms 15-minute Quadrangles, San Bernardino and Riverside Counties, California. Dibblee Geology Center Map #DF-390, Minch, J.A., ed. Santa Barbara Museum of Natural History.

Jefferson, G.T. 1986. Fossil vertebrates from the late Pleistocene sedimentary deposits in the San Bernardino and Little San Bernardino Mountains region, *in*, Kooser, M.A., and Reynolds, R.E., eds., *Geology around the margins of the eastern san Bernardino Mountains*. Publications of the Inland Geological Society, v. 1, Redlands, California.

Jefferson, G.T. 1991. A catalogue of late Quaternary vertebrates from California: Part two, mammals. Natural History Museum of Los Angeles County, Technical Reports, no. 7: i-v + 1-129.

Kottcamp, S. 2023. Paleontology Records Review for site of Joshua Tree Estates, Sunfair, San Bernardino County, San Bernardino County, California. Unpublished letter for BFSAs Environmental Services, Poway, California, by the San Bernardino County Museum, Redlands, California. (attached)

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: Electronic document, [https://vertpaleo.org/wp-content/uploads/2021/01/SVP\\_Impact\\_Mitigation\\_Guidelines-1.pdf](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

BFSAE<sub>nvironmental Services</sub>, A Perennial Company

14010 Poway Road • Suite A •

Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: twirths@bfsa.perennialenv.com



## Education

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

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

## Professional Certifications

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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

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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

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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 BFSAE, 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

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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 Locality Search Report**



**Museum**  
Division of Earth Science

**Scott Kottkamp**  
Curator of Earth Science

28 March, 2023

Brian F. Smith & Associates Environmental Services  
Attn: Todd Wirths  
14010 Poway Road  
Poway, CA 92064

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PALEONTOLOGY RECORDS REVIEW for site of Joshua Tree Estates, Sunfair,  
San Bernardino County, California

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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 (Joshua Tree Estates) is in the unincorporated community of Sunfair, California as shown on the United States Geological Survey (USGS) 7.5-minute Joshua Tree North, California quadrangle.

Geologic mapping of the region done by Dibblee and Minch (2008) indicates most of the project site is situated atop Holocene age alluvial deposits (Qa), comprised of medium to coarse-grained sand and gravel. The exact composition of Qa is variable, with fine sand, silt, and clay present in smaller proportions and sometimes being the primary grain size in individual layers. Qa settles locally into the center of valleys between hills, mountains, and other highlands, flanked by older alluvium and the resistant bedrock of the surrounding terrain. Qa deposits are unlikely to be fossiliferous.

There is a small patch of older alluvium of Pleistocene age (Qoa) exposed at the surface in the southwest corner of the project site (Dibblee and Minch 2008). Furthermore, Qoa directly underlies surficial Qa across the rest of the project site at uncertain and likely variable depth. Qa can generally be expected to thin as it nears the surface contact with Qoa. Local Qoa mostly

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consists of older fan deposits sourced from the Pinto Mountains, probably deposited between ~2.5 million to ~11,000 years ago. Qoa is variable in its precise lithology and often similar to units of Holocene age except slightly more consolidated. In the local area, Qoa is most commonly poorly-bedded to nonbedded granitic cobble-pebble gravel and sand. The source rock in the local region is primarily granitic with some gneiss. Terrestrial macro- and microfossils are commonly found in Pleistocene age alluvium throughout the southwest of North America, including much of the Mojave Desert and nearby Joshua Tree National Park (Scott et al. 2006; Harris 2014).

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 within a 1-mile radius of its perimeter. The nearest locality, SBCM 1.85.1, is approximately 3.1 miles southeast of the proposed project site. A black permineralized rodent humerus was recovered here from a washed sediment sample pertaining to the lower of two 0.46m (1.5ft) thick beds of sandy silt. The locality's broader stratigraphy consists of west-dipping tan fluvial sands and silts, often with cemented beds of peanut-like calcite concretions. A second locality, 1.85.2, occurs slightly further to the north, across the road, in similar sediments. No fossils are recorded from SBCM 1.85.2; the locality seems to only pertain to sediment samples.

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 Joshua Tree & Twentynine Palms 15 minute quadrangles, Riverside & San Bernardino Counties, California. Dibblee Geological Foundation. Dibblee Foundation Map DF-390. Scale 1:62,500.  
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Scott, E., K. Springer, J.C. Sagebiel, and C.R. Manker. 2006. Planning for the Future: A Program for Preserving and Interpreting Paleontology and Geology in Joshua Tree National Park. In: S.G. Lucas et al. 2006. Fossils from Federal Lands. New Mexico Museum of Natural History and Science Bulletin 34: 159-164.