

# PALEONTOLOGICAL ASSESSMENT FOR THE GRAND AVENUE PROJECT

## CITY OF LAKE ELSINORE, RIVERSIDE COUNTY, CALIFORNIA

APNs 379-060-005, -022, and -027

*Prepared on Behalf of:*

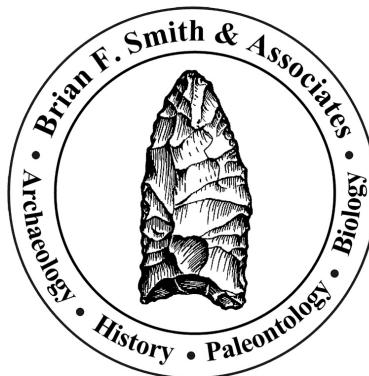
Tri Pointe Homes  
1250 Corona Pointe Court, Suite 600  
Corona, California 92879

*Prepared for:*

City of Lake Elsinore  
Community Development Department  
Planning Division  
130 South Main Street  
Lake Elsinore, California 92530

*Prepared by:*

Brian F. Smith and Associates, Inc.  
14010 Poway Road, Suite A  
Poway, California 92064



*May 7, 2021*

## **Paleontological Database Information**

**Author:** Todd A. Wirths, M.S., Senior Paleontologist, California Professional Geologist No. 7588

**Consulting Firm:** Brian F. Smith and Associates, Inc.  
14010 Poway Road, Suite A  
Poway, California 92064  
(858) 679-8218

**Report Date:** May 7, 2021

**Report Title:** Paleontological Assessment for the Grand Avenue Project, Lake Elsinore, Riverside County, California

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Poway, California 92064

**Assessor's Parcel Numbers:** 379-060-022, -027, and -005

**USGS Quadrangle:** *Alberhill, California* (7.5 minute)

**Study Area:** Approximately 35 acres

**Key Words:** Low paleontological resource sensitivity; City of Lake Elsinore; Holocene alluvial deposits; monitoring not recommended.

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## **I. INTRODUCTION AND LOCATION**

A paleontological resource assessment has been completed for the Grand Avenue Project (Assessor's Parcel Numbers 379-060-022, -027, and -005) located east of the intersection of Riverside Drive and Grand Avenue at the northwestern edge of Lake Elsinore in the city of Lake Elsinore, Riverside County, California (Figures 1 and 2). On the U.S. Geological Survey, 7.5-minute, 1:24,000-scale *Alberhill, California* topographic quadrangle map, the approximately 35-acre project is located within projected Township 6 South, Range 5 West, San Bernardino Base and Meridian (see Figure 2). The project proposes to develop approximately 18 acres of the property for a future residential subdivision.

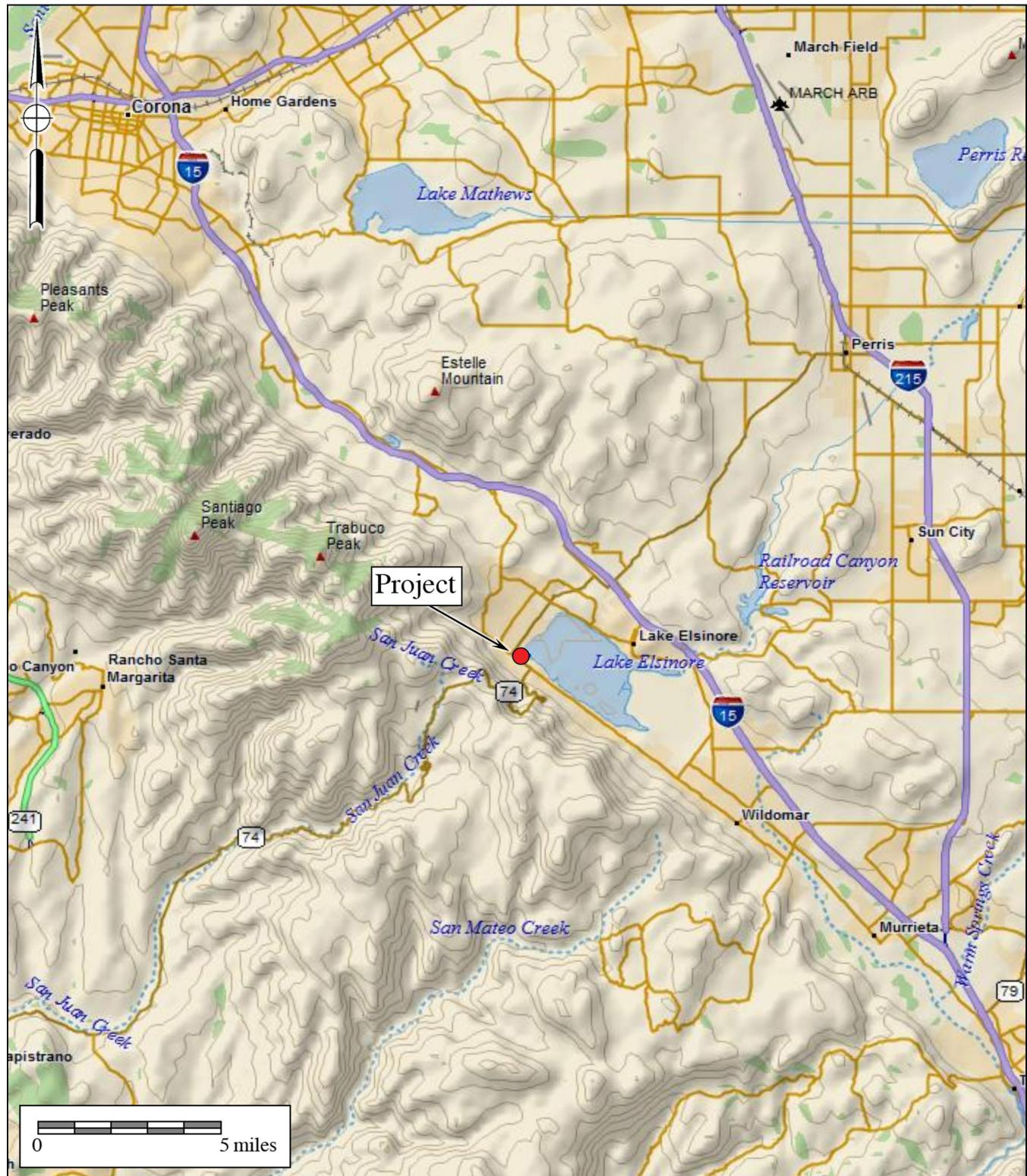
## **II. REGULATORY SETTING**

The California Environmental Quality Act (CEQA), which is patterned after the National Environmental Policy Act, is the overriding environmental document that sets the requirement for protecting California's cultural and paleontological resources. The document 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 the Implementation of CEQA, 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 the Environmental Checklist, 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). California Public Resources Code Section 5097.5 states:

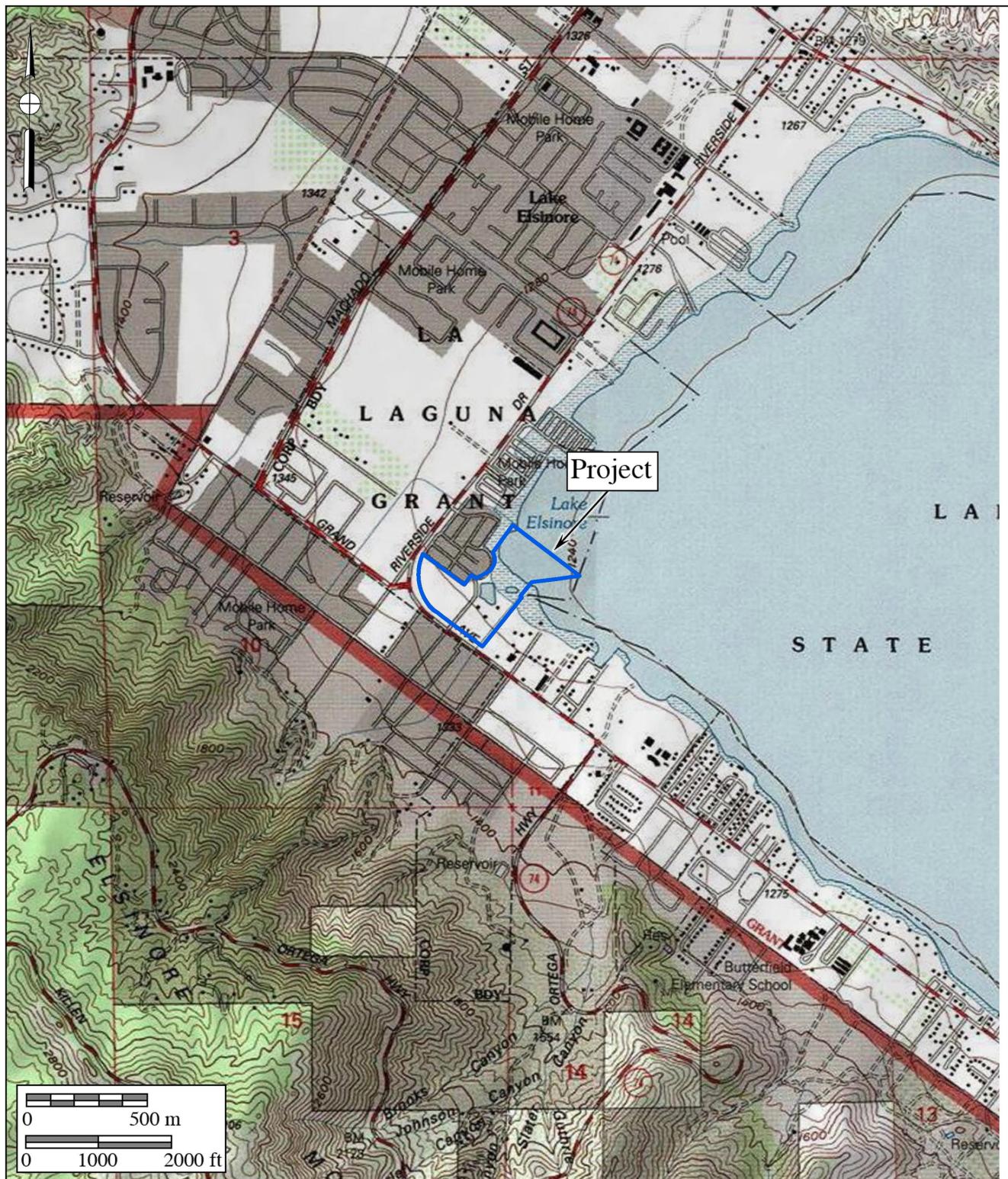
- a) A person shall not knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands.



**Figure 1**  
**General Location Map**  
The Grand Avenue Project

DeLorme (1:250,000)





**Figure 2**  
**Project Location Map**  
 The Grand Avenue Project

USGS Alberhill and Lake Elsinore Quadrangles (7.5-minute series)



- 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.

### **County of Riverside**

An interactive, online paleontological sensitivity mapping database is maintained by the County of Riverside as a research tool to access the County’s assignment of levels of paleontological sensitivity to the various geologic formations within the county (County of Riverside 2021). This is addressed in Section V of this report.

Paleontological resources located within the county of Riverside are addressed under the 2008 Multipurpose Open Space Element of the Riverside County General Plan, Policy OS 19.9, as follows:

This policy requires that when existing information indicates that a site proposed for development may contain paleontological resources, a paleontologist shall monitor site grading activities, with the authority to halt grading to collect uncovered paleontological resources, curate any resources collected with an appropriate repository, and file a report with the Planning Department documenting any paleontological resources that are found during the course of site grading. (County of Riverside 2008)

Riverside County’s “SABER Policy” (Safeguard Artifacts Being Excavated in Riverside County), enacted in October 2011 by the Riverside County Board of Supervisors, may be applicable to the current project. The “SABER Policy” requires that any paleontological resources found or unearthed in the county of Riverside be curated at a facility within Riverside County, including the Western Science Center located in the city of Hemet (County of Riverside 2015; Policy OS 19.9).

### **City of Lake Elsinore**

Paleontological resources are outlined in Chapter 4.6.7 of the City of Lake Elsinore General Plan, which was adopted on December 13, 2011 (City of Lake Elsinore 2011a). In the General Plan, mapped geologic areas are delineated according to their potential to yield fossils and are presented as Figure 4.6, “Paleontological Resources.” This map figure is copied from the County of Riverside’s interactive, online paleontological sensitivity mapping database, borrowing the paleontological sensitivity rating system as applied to geologic formations (County of Riverside 2021).

Goal 8 of the General Plan, “Preserve paleontological resources occurring within the City,” states the following:

... development in areas delineated as “High” or “Undetermined” potential sensitivity for paleontological resources [as shown on General Plan Figure 4.6], require the project applicant to hire a certified paleontologist, who must perform a literature search and/or survey and apply the relevant treatment for the site as recommended by the Society for Vertebrate Paleontology. (City of Lake Elsinore 2011a: 4-63)

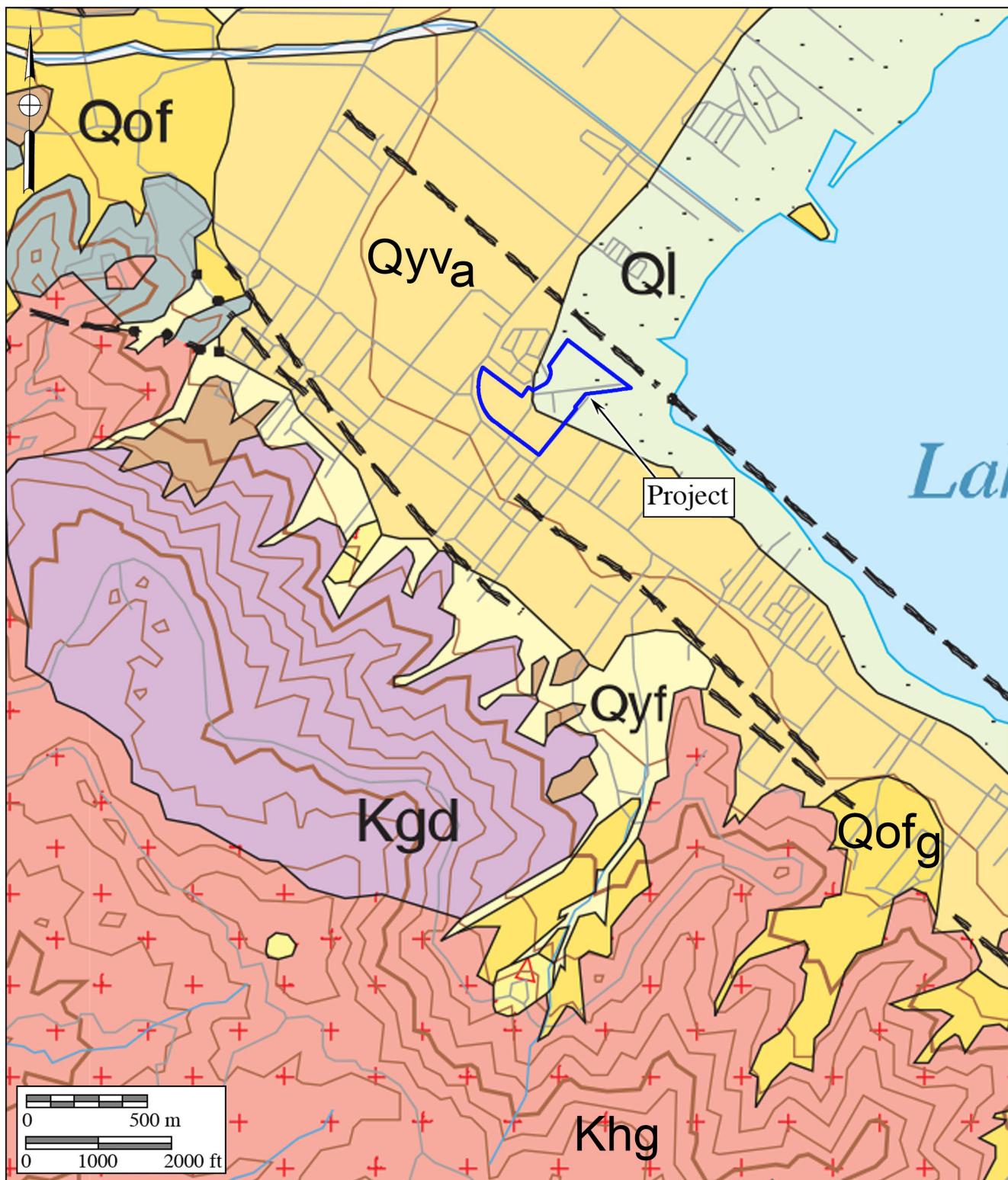
The City of Lake Elsinore Community Development Department will conduct an environmental review of a project and implement appropriate paleontological mitigation procedures, if necessary, prior to the project’s approval.

The City of Lake Elsinore General Plan Update (City of Lake Elsinore 2011b) presents the City Paleontological Resource Map as Figure 3.2-3 and further defines paleontological sensitivity ratings, as applied to geological formations, using definitions from the County of Riverside sensitivity system as a baseline reference (City of Lake Elsinore 2011b: 3.2-23). Paleontological goals, policies, and implementation programs stated in the General Plan Update are unchanged from those stated in the General Plan.

### **III. GEOLOGY**

The geology of the area surrounding the project is shown on Figure 3 (after Morton and Miller 2006). The project lies within the Elsinore Fault Zone, which is locally comprised of several active fault segments (Weber 1977; Morton and Miller 2006). The Wildomar Fault segment is mapped as just passing by the northeast side of the project (dashed black line on Figure 3).

The geologic units mapped as underlying the western portion of the project are Holocene and late Pleistocene-aged, young, sandy, alluvial-valley deposits (areas labeled “Qyv<sub>a</sub>” and shown in pale orange on Figure 3, after Morton and Miller 2006). These sedimentary deposits are indicated by Morton and Miller (2006) as almost entirely of Holocene age, consisting of unconsolidated silt, sand, and clay-bearing alluvium. The eastern portion of the project is mapped as Holocene lacustrine deposits (areas labeled “Ql” and shown in pale yellow on Figure 3) and mostly consist of fine-grained sediments (Morton and Miller 2006). Cretaceous-age granitic rocks (“Kgd” and “Khg” on Figure 3) comprise the bulk of the mountains west and south of the project, and Pleistocene, gravelly, old alluvial fan deposits (“Qof<sub>g</sub>”) and young alluvial fan deposits (“Qyf”) occur at nearby canyon mouths outside of the subject property.



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

The Grand Avenue Project

Geology after Morton and Miller (2006)



## 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), for example, when viewed in the context of local extinction of the organism or habitat, for example. Fossils are considered a non-renewable resource under state and county guidelines (see Section II of this report, above).

### Fossil Records Search

An in-house records search was performed for paleontological resources that are known in the vicinity of the project. Sources for records include those held by the Los Angeles County Natural History Museum (LACM), the San Bernardino County Museum (SBCM), the University of California at Riverside (UCR), and primary literature. No fossil localities are known from within the project boundaries.

The closest known fossil locality held by the LACM is their locality number 6059, which yielded the fossilized remains of a late Pleistocene camel (*Camelops hesternus*) from a location about five miles east of the current project. The nearest known SBCM locality is their locality number 5.5.1, located roughly eight miles northwest of the project, consisting of a fossil horse tooth of the Pleistocene genus *Plesippus* sp. Records held by the Department of Earth Sciences at UCR indicate their closest fossil locality is about three miles north to northeast of the project, consisting of leaf impressions from the Paleocene-aged (roughly 54 million years old) Silverado Formation.

## 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 therefore, is typically assigned a Low paleontological sensitivity. Pleistocene (greater than 11,700 years old) alluvial and alluvial fan deposits in the Inland Empire, 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). These Pleistocene sediments are thus accorded a High paleontological resource sensitivity.

### **Professional Standards**

The Society of Vertebrate Paleontology drafted guidelines outlining procedures, including:

[E]valuating the potential for impacts of a proposed action on paleontological resources and for mitigating those impacts. Impact mitigation includes pre-project survey and salvage, monitoring and screen washing during excavation to salvage fossils, conservation and inventory, and final reports and specimen curation. The objective of these procedures is to offer standard methods for assessing potential impacts to fossils and mitigating these impacts. (Society of Vertebrate Paleontology 2010)

The guidelines 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 upon 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.

### **Paleontological Sensitivity Assessment**

On Figure 4.6, “Paleontological Resources,” from the City of Lake Elsinore General Plan (City of Lake Elsinore 2011a), the project plots within an area designated as having a “Low” potential paleontological resource sensitivity, as shown in the area colored yellow on Figure 4. The General Plan Update defines areas assigned with a Low paleontological potential or sensitivity as encompassing “lands for which previous field surveys and documentation demonstrates as having a low potential for containing significant paleontological resources subject to adverse impacts” (City of Lake Elsinore 2011b). However, criteria are not provided to define what is meant by “low potential” (City of Lake Elsinore 2011b). In general practice, assignment of a “low” sensitivity reflects rocks that generally do not contain fossils, such as modern (Holocene) sedimentary deposits and igneous rocks. Holocene deposits are generally too young to yield

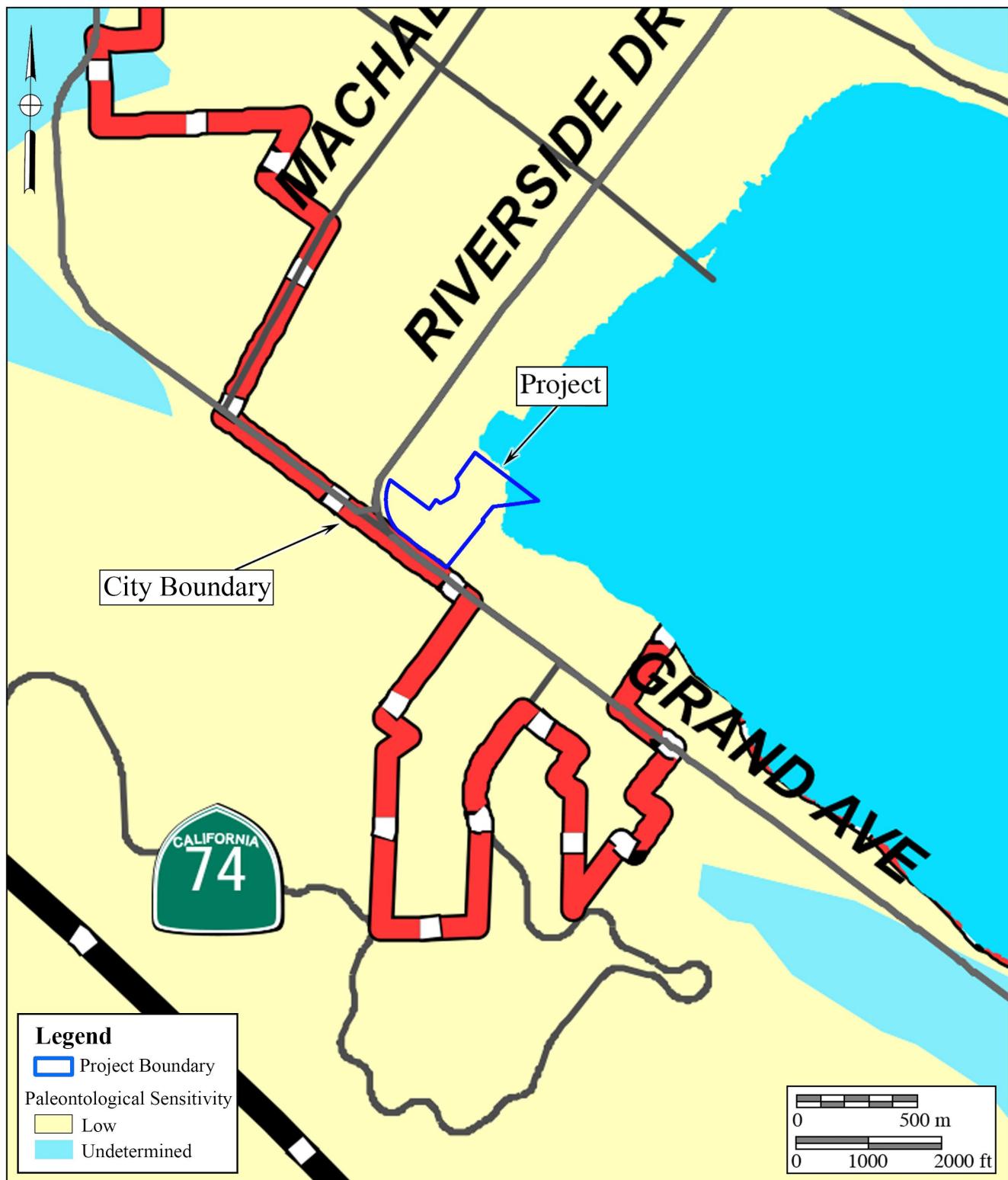
fossils. Since a “low” assignment has been applied to a wide spectrum of rock units, the Riverside County Land Information System, and therefore the City of Lake Elsinore General Plan, suggests that a qualified professional conduct an inspection of the site to determine its suitability to yield fossils.

A field survey of the subject property was conducted by BFSA staff on May 6, 2021. No paleontological resources were identified during the survey; however, ground visibility was limited throughout the project as it was hindered by dense vegetation, piles of pushed dirt and building rubble, and the remains of an old adobe structure.

## **VI. FINDINGS AND RECOMMENDATIONS**

Based upon the presence of predominately Holocene-aged sediments underlying the Grand Avenue Project, the low paleontological sensitivity assigned to these deposits by the City of Lake Elsinore and the County of Riverside, and the lack of known fossil localities near the project, mitigation monitoring for paleontological resources during earth disturbance activities is not recommended. However, if fossils are discovered during the project, a proposed Mitigation Monitoring and Reporting Program (MMRP) is provided below. When implemented with the provisions of CEQA, the City of Lake Elsinore (2011a, 2011b), and the Society of Vertebrate Paleontology (2010), this proposed MMRP would mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources (fossils), if present, to a level below significant. The proposed MMRP is as follows:

- 1) If paleontological resources (fossils) are discovered during grading, excavation, or drilling activities, work must stop in the vicinity of the fossil(s), a 25-foot area around the locality must be cordoned off from further impacts, and a Riverside County-approved paleontologist must be consulted immediately to inspect the fossil locality. The paleontologist will inspect the fossil locality to determine its significance. If the fossil is deemed significant, the fossil will be salvaged and paleontological monitoring of remaining earth disturbance activities may be warranted. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediments 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. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface or, if present, are determined by qualified paleontological personnel upon exposure and examination to have a low potential to contain or yield fossil resources.



**Figure 4**  
**Paleontological Sensitivity Map**

The Grand Avenue Project

After City of Lake Elsinore General Plan (2011a)

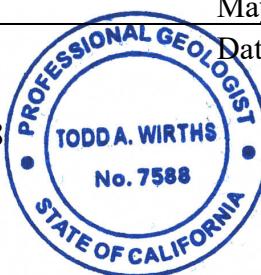


- 2) Paleontological salvage during trenching and boring activities is typically from the generated spoils and does not delay the trenching or drilling activities. Fossils will be collected and placed in cardboard flats or plastic buckets and identified by field number, collector, and date collected. Notes will be taken on the map location and stratigraphy of the site, and the site will be photographed before it is vacated and the fossils are removed to a safe place.
- 3) Particularly small invertebrate fossils typically represent multiple specimens of a limited number of organisms, and a scientifically suitable sample can be obtained from one to several five-gallon buckets of fossiliferous sediment. If it is possible to dry screen the sediment in the field, a concentrated sample may consist of one or two buckets of material. For vertebrate fossils, the test is usually the observed presence of small pieces of bones within the sediments. If present, as many as 20 to 40 five-gallon buckets of sediment can be collected and returned to a separate facility to wet-screen the sediment.
- 4) In the laboratory, individual fossils are cleaned of extraneous matrix, any breaks are repaired, and the specimen, if needed, is stabilized by soaking in an archivally approved acrylic hardener (e.g., a solution of acetone and Paraloid B-72).
- 5) Recovered specimens will be prepared to a point of identification and permanent preservation, including screen washing sediments to recover small invertebrates and vertebrates, if necessary. Preparation of individual vertebrate fossils is often more time-consuming than for accumulations of invertebrate fossils.
- 6) Recovered specimens will be curated into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage (e.g., the Western Science Center Museum in Hemet, California). The paleontological program should include a written repository agreement prior to the initiation of mitigation activities.
- 7) A final written report will be produced by the project paleontologist and submitted to the City of Lake Elsinore at the conclusion of grading activities for the project. The report will include findings and significance, lists of all fossils recovered, and necessary maps and graphics to accurately record their original location(s). The report, when submitted to the City of Lake Elsinore will signify satisfactory completion of the project program to mitigate impacts to any 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.

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

May 7, 2021  
Date  


## VIII. REFERENCES CITED

City of Lake Elsinore. 2011a. General Plan. <http://www.lake-elsinore.org/city-hall/city-departments/community-development/planning/lake-elsinore-general-plan>. Chapter 4: Resource Protection and Preservation.

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**APPENDIX A**

**Qualifications of Key Personnel**

# Todd A. Wirths, MS, PG No. 7588



## Senior Paleontologist

Brian F. Smith and Associates, Inc.  
14010 Poway Road • Suite A •  
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: [twirths@bfsa-ca.com](mailto:twirths@bfsa-ca.com)

## Education

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<b>Master of Science, Geological Sciences, San Diego State University, California</b>	<b>1995</b>
<b>Bachelor of Arts, Earth Sciences, University of California, Santa Cruz</b>	<b>1992</b>

## 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 BFS, 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.