# PALEONTOLOGICAL ASSESSMENT FOR THE 9822 RUSSELL AVENUE PROJECT

## CITY OF GARDEN GROVE, ORANGE COUNTY, CALIFORNIA

**APN 098-081-19**

***Prepared on Behalf of:***

**RE Consulting**
**5742 Calle Polvorosa**
**San Clemente, California 92673**

***Prepared for:***

**City of Garden Grove**
**11222 Acacia Parkway**
**Garden Grove, California 92840**

***Prepared by:***

**BFSA Environmental Services,**
**a Perennial Company**
**14010 Poway Road, Suite A**
**Poway, California 92064**

***December 24, 2025***

# Paleontological Database Information

| | |
|---|---|
| ***Author:*** | Todd A. Wirths, M.S., P.G., Principal Paleontologist, California Professional Geologist No. 7588 |
| ***Prepared by:*** | BFSA Environmental Services, a Perennial Company<br>14010 Poway Road, Suite A<br>Poway, California 92064 |
| ***Report Date:*** | December 24, 2025 |
| ***Report Title:*** | Paleontological Assessment for the 9822 Russell Avenue Project, City of Garden Grove, Orange County, California, APN 098-081-19 |
| ***Prepared on Behalf of:*** | RE Consulting<br>5742 Calle Polvorosa<br>San Clemente, California 92673 |
| ***Prepared for:*** | City of Garden Grove<br>11222 Acacia Parkway<br>Garden Grove, California 92840 |
| ***Assessor's Parcel Number:*** | 098-081-19 |
| ***USGS Quadrangle:*** | Township 5 South, Range 10 West, on the USGS *Anaheim, California* (7.5-minute) topographic quadrangle |
| ***Study Area:*** | Approximately 1.8 acres |
| ***Key Words:*** | Paleontological assessment; Holocene alluvial deposits; low paleontological sensitivity; monitoring is not recommended. |

# Table of Contents

**Section** **Page**

I. INTRODUCTION AND LOCATION ..... 1
II. REGULATORY SETTING ..... 1
*State of California* ..... 1
*City of Garden Grove* ..... 5
III. GEOLOGY ..... 5
IV. PALEONTOLOGICAL RESOURCES ..... 7
*Definition* ..... 7
*Paleontological Resource Records Search* ..... 7
V. PALEONTOLOGICAL SENSITIVITY ..... 7
*Overview* ..... 7
*Professional Standards* ..... 8
VI. CONCLUSIONS AND RECOMMENDATIONS ..... 8
VII. CERTIFICATION ..... 9
VIII. REFERENCES ..... 9

# Appendices

Appendix A – Qualifications of Key Personnel
Appendix B – Paleontological Locality Records Search

# List of Figures

**Figure** **Page**

Figure 1 General Location Map ..... 2
Figure 2 Project Location Map ..... 3
Figure 3 Project Development Map ..... 4
Figure 4 Geologic Map ..... 6

# I. INTRODUCTION AND LOCATION

A paleontological resource assessment has been completed for the 9822 Russell Avenue Project to comply with the California Environmental Quality Act (CEQA) and City of Garden Grove environmental requirements. The project is located southeast of the intersection of Russell Avenue and Kerry Street in the city of Garden Grove, Orange County, California (Figures 1 and 2). The approximately 1.8-acre project consists of one parcel (Assessor's Parcel Number [APN] 098-081-19) and is situated within Township 5 South, Range 10 West, on the U.S. Geological Survey (USGS) *Anaheim, California* (7.5-minute) topographic quadrangle map (see Figure 2).

The project includes the demolition and replacement of the existing church and preschool buildings and the surrounding lot with a multi-family residential development, including associated parking and infrastructure (Figure 3). A remedial grading cut of two feet was recommended for the project, as well as a minimum one foot cut below the bottom of footings for residential structures within "existing" soils (Albus and Nguyen 2025).

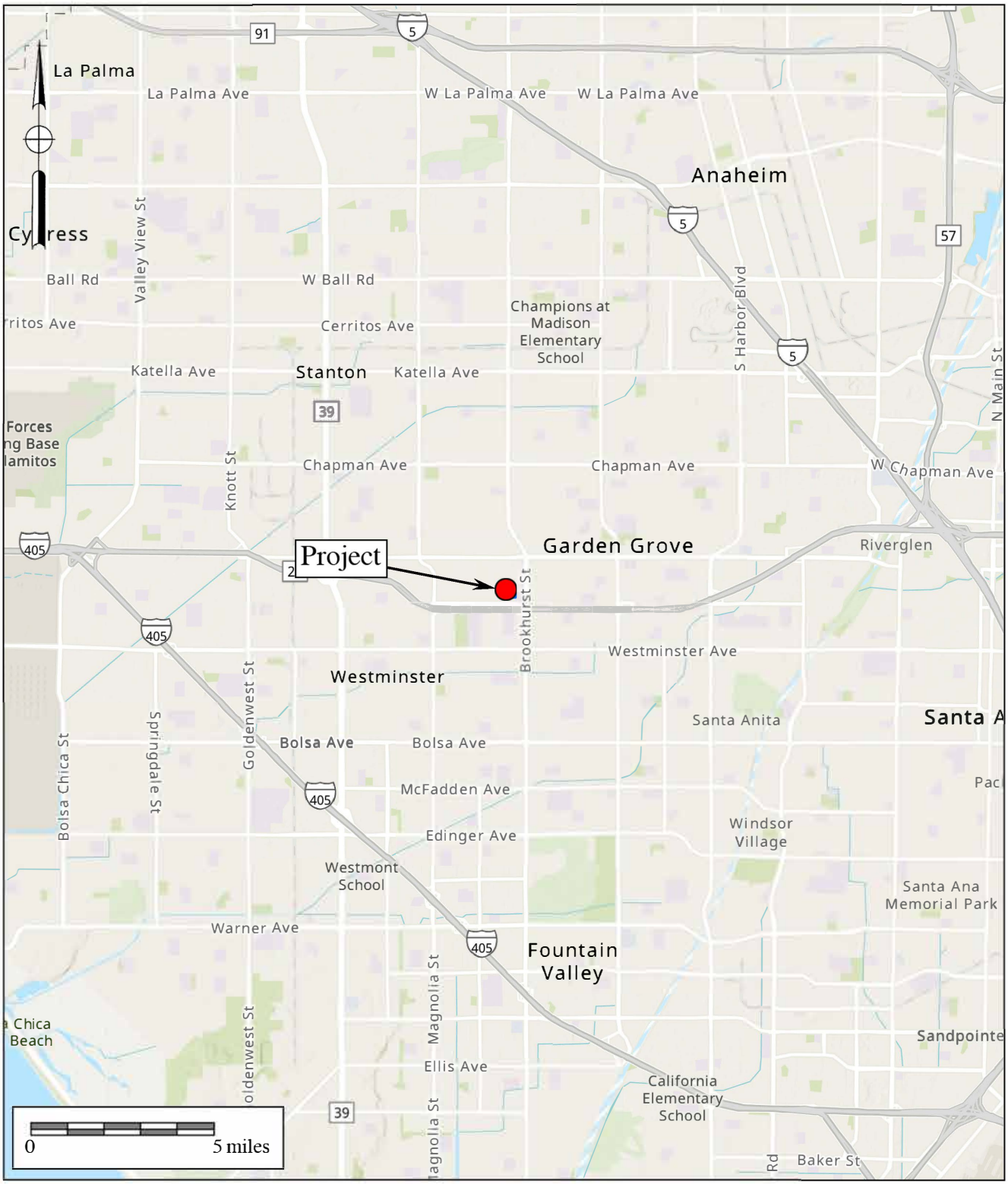
As the lead agency, the City of Garden Grove has required the preparation of a paleontological assessment to evaluate the project's potential to yield paleontological resources. The paleontological assessment of the project included a review of paleontological literature and fossil locality records in the area, a review of the underlying geology, and recommendations to mitigate impacts to potential paleontological resources, if necessary. A paleontological survey of the project was not performed, since the parcel is completely developed.

# II. REGULATORY SETTING

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 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 on the environment, determine whether the impacts are significant, and provide recommendations, if necessary.



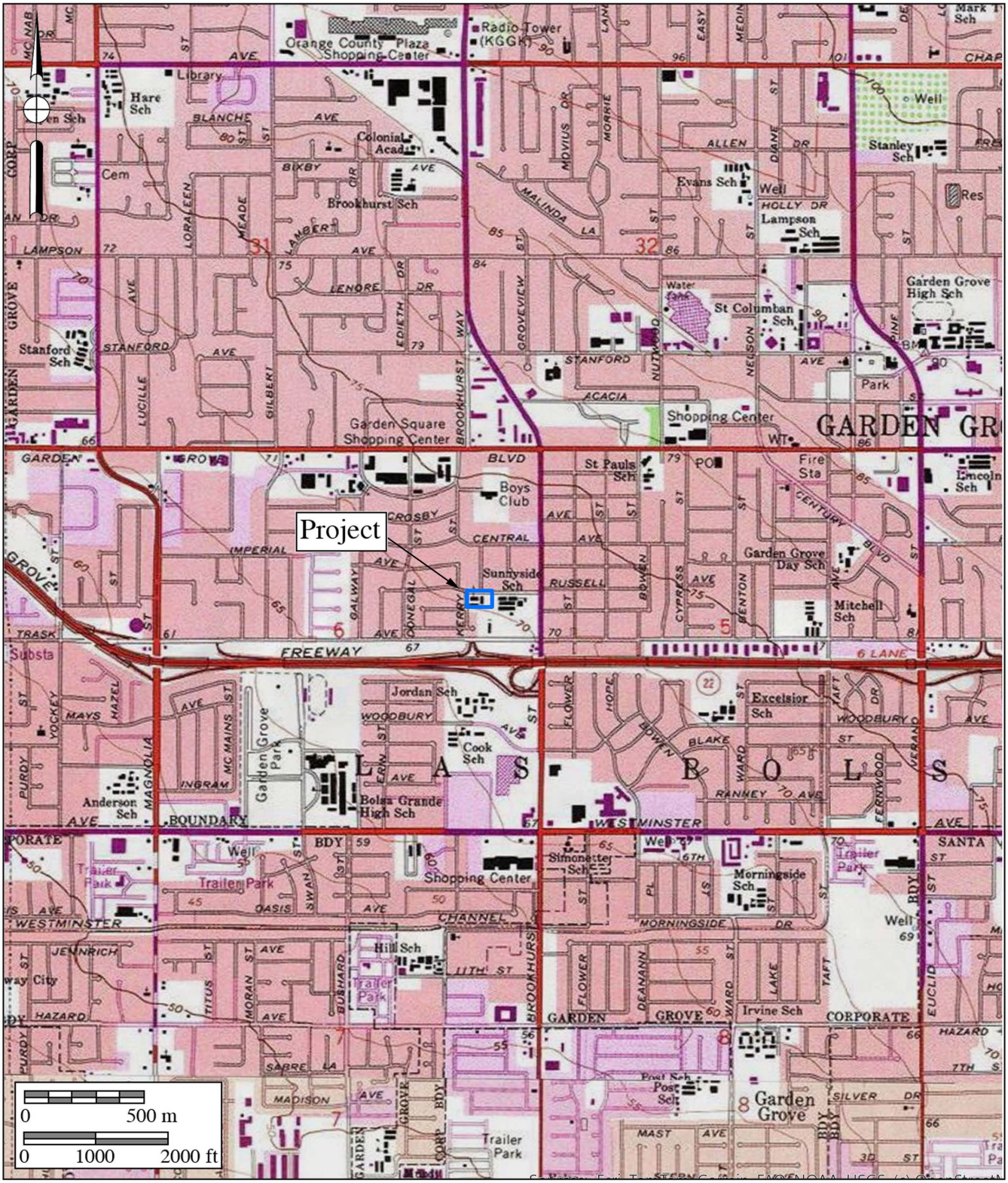

BFSA Environmental Services
A Perennial Company

# Figure 1

## General Location Map

The 9822 Russell Avenue Project

ESRI World Topographic Map



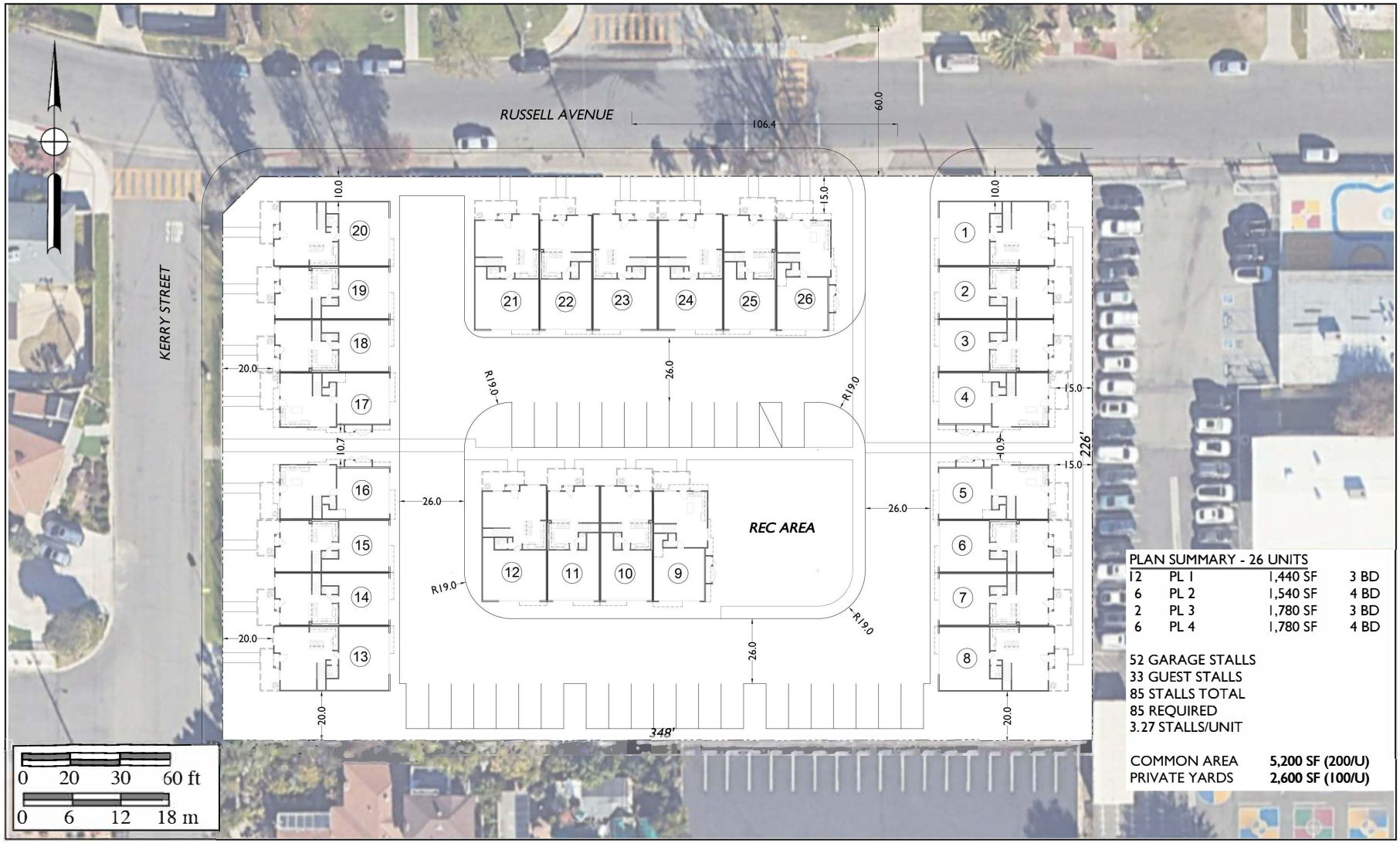

BFSA Environmental Services
A Perennial Company

# Figure 2

## Project Location Map

The 9822 Russell Avenue Project

USGS *Anaheim* and *Newport Beach* Quadrangles (7.5-minute series)




BFSA Environmental Services
A Perennial Company

# Figure 3
## Project Development Map
The 9822 Russell Avenue Project

In CEQA's Environmental Checklist Form, a question to respond to 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, paraphrased below:

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.

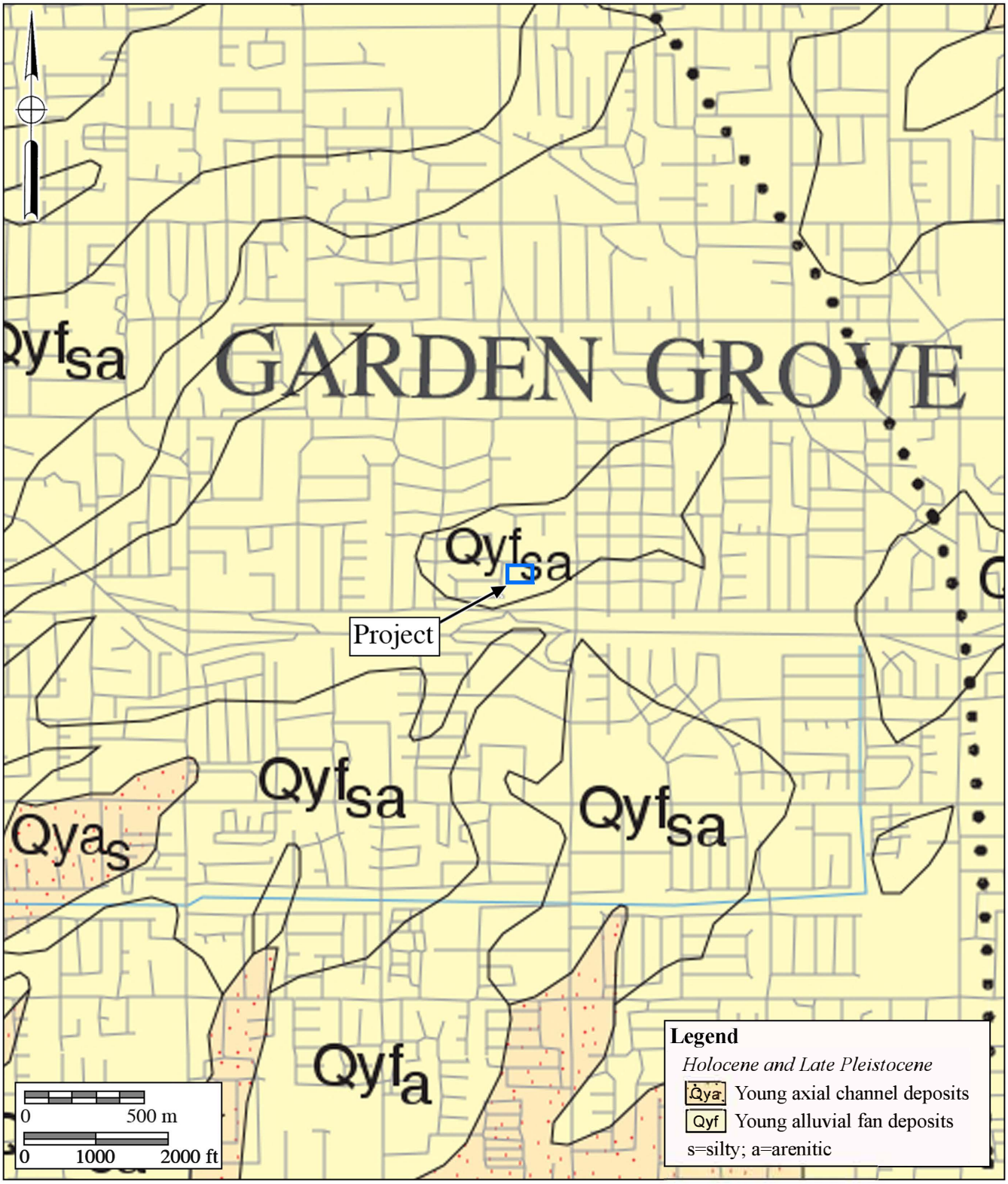
*City of Garden Grove*

While the City's general plan does not specifically mention paleontological resources, they can be included under archeological/cultural resources, in which the general plan outlines policies and goals for their protection and preservation (City of Garden Grove 2008: 10-9).

# III. GEOLOGY

The project is located within a broad, flat coastal plain composed of Holocene and late Pleistocene-aged young alluvium at the surface, within the southern part of the Los Angeles Basin (areas labeled as "$Qyf_{sa}$," "$Qyf_{a}$," and "$Qya_{s}$" on Figure 4, after Morton and Miller 2006; Hillhouse et al. 2002). These deposits are described as unconsolidated to moderately consolidated silty and sandy alluvial fan deposits (Morton and Miller 2006). During the Holocene, activity of the Santa Ana River points to widespread sheet flooding and wandering, as indicated by extensive and continuous "younger" sand and silt deposits (Greenwood and Pridmore 2001). The depth of the geologic age transition from Holocene to Pleistocene within the alluvial deposits is not known.

A geotechnical investigation was recently performed for the project by Albus & Associates, Inc. (Albus and Nguyen 2025). The investigation found that the project is covered by approximately two feet of compacted artificial fill, but locally thicker deposits of fill were anticipated under existing building pads. Alluvium underlying the fill extended to the maximum depth explored of 51 feet and generally consisted of silty sands to a depth of approximately 10 feet, in turn overlying sandy silts and sands with various amounts of silt. Albus and Nguyen (2025) did not speculate on the geologic age of the alluvium encountered at the project.




BFSA Environmental Services
A Perennial Company

**Figure 4**

**Geologic Map**

The 9822 Russell 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 2025) but may include younger remains (subfossils) when viewed in the context of local extinction of the organism or habitat. Fossils are considered a nonrenewable resource under state guidelines (see Section II of this report).

*Paleontological Resource Records Search*

A paleontological collections and locality records search was conducted for the project by the Natural History Museum of Los Angeles County (LACM) (Bell 2025, Appendix B). Based upon the records search, no known fossil localities are within several miles of the project. According to Bell (2025), several fossil localities are known in more distant areas surrounding the project, and all are from Pleistocene-aged geologic formations (except locality LACM IP 4560, a Pliocene-aged scallop).

A paleontological collections and locality records search was performed for a prior, nearby project by the curator of paleontology for OC Parks ("Cooper Center") (Gelnaw 2024). Similar to the LACM records search results, no fossil localities are known within one mile of the project, according to the paleontological database maintained by OC Parks.

A search of the online paleontological database maintained by the San Diego Natural History Museum (SDNHM) was performed (SDNHM n.d.). The closest fossil locality to the project held by that institution is from Pleistocene-aged deposits in Anaheim, between three and four miles to the northeast, composed of the bones and teeth of multiple rodent species, unidentified large mammal bones, freshwater bivalve shells, and aquatic and land gastropod shells (SDNHM locality no. 5907).

# V. PALEONTOLOGICAL SENSITIVITY

*Overview*

The degree of paleontological sensitivity of any particular area is based on a number of factors, including 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 may 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 (older than 11,700 years old) alluvial and alluvial fan

deposits in Orange County, however, are known to yield important terrestrial vertebrate fossils such as extinct mammoths, mastodons, giant ground sloths, extinct species of horse, bison, camel, and others (Jefferson 1991). These Pleistocene sediments are accorded a high paleontological resource sensitivity.

*Professional Standards*

The Society of Vertebrate Paleontology (2025) has put forth the guideline criteria, a "Fossil Prediction Map System" (FPMS), which include six categories of paleontological sensitivity for geologic units (formations) that might be impacted by a proposed project, as listed below:

- *5 = Very High Potential:* Highly fossiliferous geologic units that consistently and predictably preserve scientifically significant fossils.
- *4 = High Potential:* Highly fossiliferous geologic units that preserve scientifically significant fossils, but their concentrations vary and are less predictable than 5.
- *3 = Moderate Potential:* Fossiliferous geologic units that are often marine in origin and in which fossils may be common, but scientifically significant fossils are isolated or sparse.
- *2 = Low Potential:* Geologic units that are not likely to preserve fossils, including sedimentary deposits that are generally younger than 11,700 years before present, older sedimentary units that only rarely preserve fossils, or units that exhibit physical and chemical alteration (diagenetic changes) that make fossil preservation unlikely.
- *1 = Very Low Potential:* Geologic units that are not likely to contain recognizable fossils including Precambrian units and units that are igneous or metamorphic, excluding air-fall and reworked volcanic ash.
- *U = Undetermined Potential:* Geologic units that cannot be assigned an informed FPMS designation. This includes units that have not been subject to prior field surveys but that contain lithologies or preserve depositional settings that are known to be conducive to fossil preservation, units that have not been published in the scientific literature, and units in which reports of fossils have not been verified.

Based upon the FPMS criteria, the alluvium mapped at the surface of the project has a low potential to contain paleontological resources.

## VI. CONCLUSIONS AND RECOMMENDATIONS

The project is situated within Holocene-aged alluvial deposits that likely overlie older, paleontologically sensitive Pleistocene alluvial deposits. The depth of the age transition from Holocene to Pleistocene within the alluvial deposits is not known at the project; however, based upon the moderate density of the alluvial strata indicated in the geotechnical boring logs (Albus and Nguyen 2025), the age transition could be fairly deep. Based upon the shallow proposed

grading depths for the development, the project will not likely encounter potentially paleontologically sensitive Pleistocene alluvium. Therefore, paleontological monitoring is not recommended for the project. A Paleontological Resource Impact Mitigation Program (PRIMP) is not warranted. However, if paleontological resources are discovered during excavation activities, a qualified paleontologist should be consulted to determine the significance of the discovery. If the discovery is determined to be significant by the qualified paleontologist, paleontological monitoring could be required.

A qualified paleontologist is defined as an individual with a master's or doctorate in paleontology or geology, who has proven experience in 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.

## 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.

December 24, 2025

Todd A. Wirths, M.S., P.G.
Principal Paleontologist
California Professional Geologist No. 7588

Date

## VIII. REFERENCES

Albus, D.E., and Nguyen, H.D. 2025. Preliminary Geotechnical Investigation Report, Proposed Residential Development, 9822 Russell Avenue, Garden Grove, California. Prepared for Melia Homes, Irvine, California, by Albus & Associates, Inc., Anaheim, California.

City of Garden Grove 2008. Garden Grove General Plan 2030. https://ggcity.org/planning/general-plan

Gelnaw, W. 2024. Paleontological record search letter for the Orco Stanton Project. For BFSA Environnemental Services, Poway, California, by the OC Parks Division of Orange County.

Greenwood, R.B., and Pridmore, C.L. 2001. Liquefaction Zones in the Anaheim and Newport Beach 7.5-Minute Quadrangles, Orange County, California, 1997, *revised* 2001; *in* Seismic Hazard Zone Report for the Anaheim and Newport Beach 7.5-Minute Quadrangles, Orange County, California; Seismic Hazard Zone Report 03, California Division of Mines and Geology.

Hillhouse, J.W., Reichard, E.G., and Ponti, D.J. 2002. Probing the Los Angeles Basin – Insights into ground-water resources and earthquake hazards. U.S. Geological Survey Fact Sheet 086-02.

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.

Morton, D.M. and Miller, F.K. 2006. Geologic map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California: U.S. Geological Survey Open-File Report 06-1217, scale 1:100,000.

San Diego Natural History Museum. N.d. Paleontology research collection database. Electronic database, https://www.sdnhm.org/science/paleontology/research/collection-database/, accessed December 17, 2025.

Society of Vertebrate Paleontology. 2025. Best Practice Guidelines for Mitigation of Adverse Impacts on Paleontological Resources; by the SVP Government Affairs Committee. https://vertpaleo.org/wp-content/uploads/2025/10/SVP_Mitigation_Paleontology_Best_Practices_First_edition_October_2025.pdf.

# APPENDIX A

## Qualifications of Key Personnel

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


## Principal Paleontologist

BFSA Environmental Services, a Perennial Company
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • Email: twirths@bfsa.perennialenv.com


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 Director, 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

2025 *Paleontological Monitoring Report for the Ontario Ranch Business Park Project, City of Ontario, San Bernardino County, California*. Prepared for Real Estate Developmental Associates, LLC.

2025 *Paleontological Assessment for the Irwindale Aggregates Project, 13550 Live Oak Avenue, Irwindale, Los Angeles County, California*. Prepared for Lilburn Corporation, Inc.

2025 *Paleontological Resource Impact Mitigation Program for the Canterwood 53 Project (BGR2400072; TTM 38332), Riverside County, California*. Prepared for KB Home Inland Empire Division.

2025 *Paleontological Monitoring Report for the Alberhill Tract 28214-9 Project, city of Lake Elsinore, Riverside County, California*. Prepared for Pulte Group.

2025 *Paleontological Assessment for the Quail Valley Nature Park Project, City of Menifee, Riverside County, California*. Prepared for EPD Solutions, Inc.

2025 *Paleontological Assessment for the Hesperia Gateway Project, City of Hesperia, San Bernardino County, California.* Prepared for T&B Planning.

2024 *Paleontological Resource Impact Mitigation Program for the 450 The Promenade North Project, City of Long Beach, Los Angeles County, California.* Prepared for JPI-West Region.

2024 *Paleontological Assessment for the Noble Creek Vistas SPA Project, Beaumont, Riverside County, California*. Prepared for EPD Solutions, Inc.

2024 *Paleontological Assessment for the High Desert Gas Station Project, Yucca Grove, San Bernardino County, California*. Prepared for Lilburn Corporation, Inc.

2024 *Paleontological Resource Impact Mitigation Program for the 424 Berry Way Project, Brea, Orange County, California*. Prepared for EPD Solutions, Inc.

2024 *Paleontological Monitoring Report for the Manchester Pacific Gateway/IQHQ RaDD Project, San Diego, California*. Prepared for Manchester Financial Group LP.

2024 *Paleontological Resource Impact Mitigation Program for the Vernola Ranch Project, Jurupa Valley, Riverside County, California.* Prepared for Lennar Homes of California.

2023 *Paleontological Assessment for the Kramer Junction Solar Project, Kramer Junction, San Bernardino County, California*. Prepared for San Bernardino CSG 3 LLC.

2023 *Paleontological Monitoring and Mitigation Plan for the Moss Street Beach Access Improvements Project, Moss Street Beach, City of Laguna Beach, California*. Prepared for the City of Laguna Beach.

2023 *Paleontological Monitoring Report for the 11th and Broadway Residential Towers Project, San Diego, California*. Prepared for Pinnacle International Development.

2023 *Paleontological Assessment for the Willow Street and Orange Avenue Project, City of Signal Hill, Los Angeles County, California*. Prepared for CenterPoint Properties.

2023 *Paleontological Resource Assessment Update for the Summerwind Ranch Specific Plan Amendment, Phases 2-5, Calimesa*. Prepared for Jen So Cal 2, LLC.

2023 *Paleontological Resource Impact Mitigation Program for the Palisade Temescal Canyon Project, Riverside County, California, PPT220036, BGR2300031, BGR2300032*. Prepared for North Palisade Partners, LLC.

# APPENDIX B

## Paleontological Locality Records Search

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Research & Collections

e-mail: paleorecords@nhm.org

December 14, 2025

BFSA Environmental Services
Attn: Todd A. Wirths

re: Paleontological resources records search for the 9822 Russell Avenue Project (BFSA project no. 25279.CA)

Dear Todd:

I have conducted a search of our paleontology collection records for the proposed development at the 9822 Russell Avenue Project area as outlined on the portion of the Anaheim USGS topographic quadrangle map that you sent to me via e-mail on December 2, 2025. We do not have fossil localities that have been recorded or georeferenced directly within the proposed project area, but we do have fossil localities nearby from similar sedimentary deposits that may occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County (NHMLA).

| Locality Number | Location | Formation | Taxa | Depth |
|---|---|---|---|---|
| LACM IP 4560 | east of Hwy. 39; north from Rosecrans Ave | Unknown (Pliocene) | *Pecten caurinus* Gould | Surface in stream bed |
| LACM VP 1652 | Rio Vista Avenue south of Lincoln Avenue | Alluvium (Pleistocene) | Sheep (*Ovis*) | Unknown (excavations for housing project) |
| LACM VP 65113 | Wintersburg Road; Huntington Beach | Unknown formation (Pleistocene) | Mammoth (*Mammuthus*), bison (*Bison*); uncatalogued invertebrates | 6 - 20 feet bgs |
| LACM VP 7657 - 7659 | Ellis Avenue & Patterson Lane, Huntington Beach | Unknown formation (Pleistocene; gray siltstone) | School shark (*Galeorhinus*), eagle ray *(Myliobatus*), goby (*Lepidogobius, Leptocottus*), midshipmen (*Porichthys*), croaker (*Seriphus*), flatfish (C*itharichthys*), cusk-eel (*Otophidium*), skate (*Raja*), angelshark (*Squatina*), sculpin (Cottidae) | 150 - 350 feet bgs |
| LACM IP 23657 | Huntington Central Park West | Unknown formation (Plesitocene; sands) | Invertebrates (uncatalogued) | Surface |

*VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface*

This records search is limited to the records of the NHMLA. It is not intended as a

paleontological assessment of the project for the purposes of California Environmental Quality Act (CEQA) or National Environmental Policy Act (NEPA). Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a paleontological assessment be conducted by a paleontologist meeting Federal (43 Code of Federal Regulations Part 49.110) or Society of Vertebrate Paleontology standards for compliance with applicable regulations, such as CEQA or NEPA.

Sincerely,

Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County