PALEONTOLOGICAL RESOURCES ASSESSMENT FOR THE BAY & DAY COMMERCE CENTER PROJECT

MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA

APNs 263-230-001, -003, -004, and -025

Prepared on Behalf of:

T&B Planning, Inc.
3200 El Camino Real, Suite 100
Irvine, California 92602

Prepared for:

City of Moreno Valley
Community Development Department
Planning Division
14177 Frederick Street
Moreno Valley, California 92552

Prepared by:

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

August 15, 2023; Revised February 20, 2024

BFSA Environmental Services
A Perennial Company

Paleontological Database Information

Author:	Todd A. Wirths, M.S., Senior Paleontologist, California Professional Geologist No. 7588
Consulting Firm:	BFSA Environmental Services, a Perennial Company 14010 Poway Road, Suite A Poway, California 92064
Report Date:	August 15, 2023; Revised February 20, 2024
Report Title:	Paleontological Assessment for the Bay & Day Commerce Center Project, Moreno Valley, Riverside County, California
Prepared on Behalf of:	T&B Planning, Inc. 3200 El Camino Real, Suite 100 Irvine, California 92602
Prepared for:	City of Moreno Valley Community Development Department Planning Division 14177 Frederick Street Moreno Valley, California 92552
USGS Quadrangle:	*Riverside East, California* (7.5-minute)
Assessor's Parcel Numbers:	263-230-001, -003, -004, and -025
Study Area:	9.7 acres
Key Words*:*	Paleontological assessment; Pleistocene very old alluvial fan deposits; High paleontological resource sensitivity; Riverside County; city of Moreno Valley.

Table of Contents

Appendices

List of Figures

I. INTRODUCTION AND LOCATION

This paleontological assessment report has been completed for the Bay & Day Commerce Center Project located at the southwest corner of Bay Avenue and Day Street in the city of Moreno Valley, Riverside County, California (Figure 1). The project is comprised of four parcels (Assessor's Parcel Numbers [APNs] 263-230-001, -003, -004, and -025) totaling 9.7 acres. On the U.S. Geological Survey (USGS) 1:24,000-scale *Riverside East, California* (7.5-minute) topographic quadrangle map, the project is located in Section 10, Township 3 South, Range 4 West of the San Bernardino Baseline and Meridian (Figure 2). Elevations within the project range from approximately 1,542 to 1,568 feet above mean sea level. The entire project has been disked in the past and disturbed by historic agricultural use and the construction of multiple structures. The project proposes an industrial building with associated improvements.

As the lead agency, the City of Moreno Valley 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 for a previous project in the area; a review of the underlying geology; and recommendations to mitigate impacts to potential paleontological resources, if necessary.

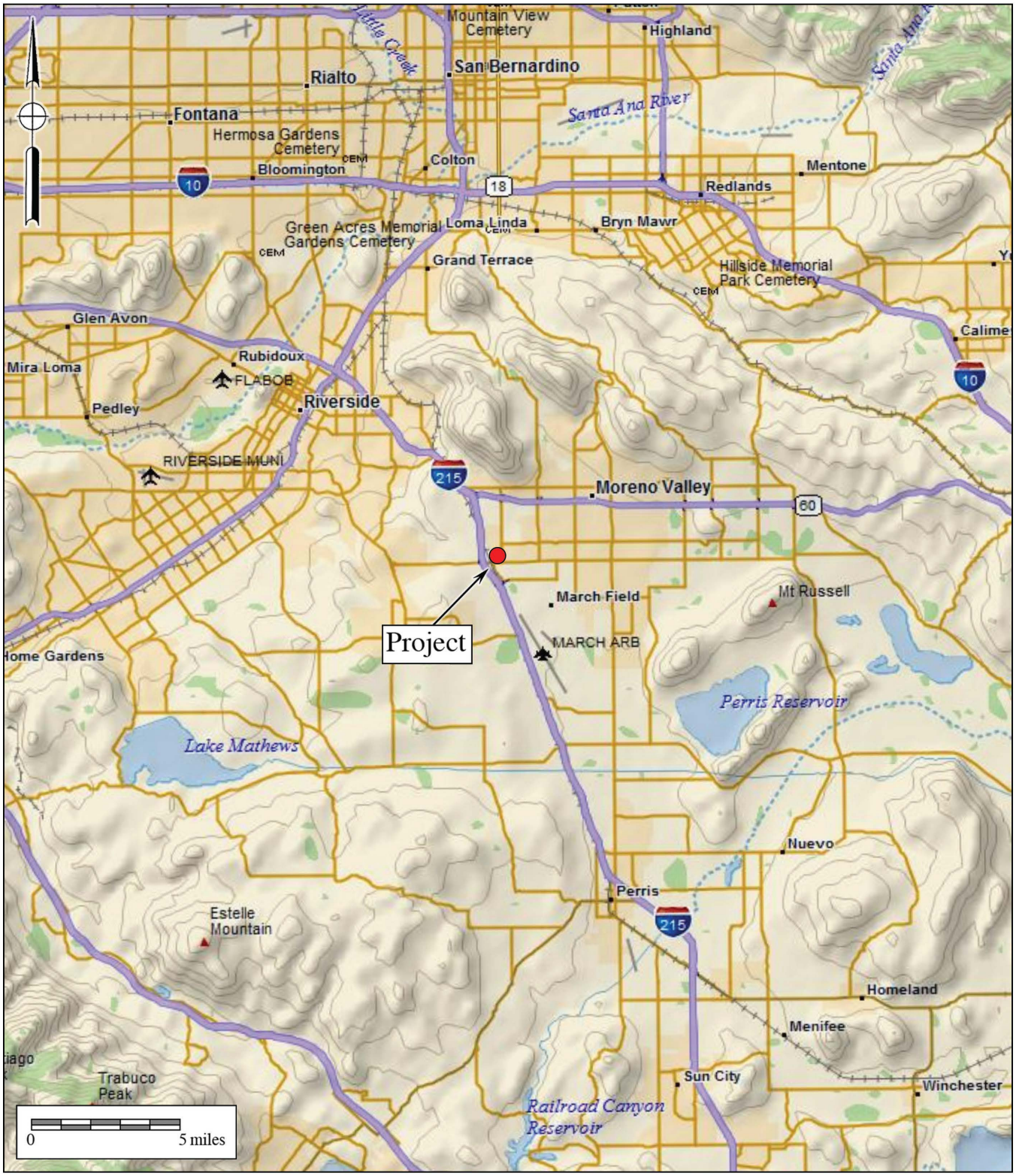
II. REGULATORY SETTING

The California Environmental Quality Act (CEQA), which is patterned after the National Environmental Policy Act, is the overriding environmental regulation 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 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:



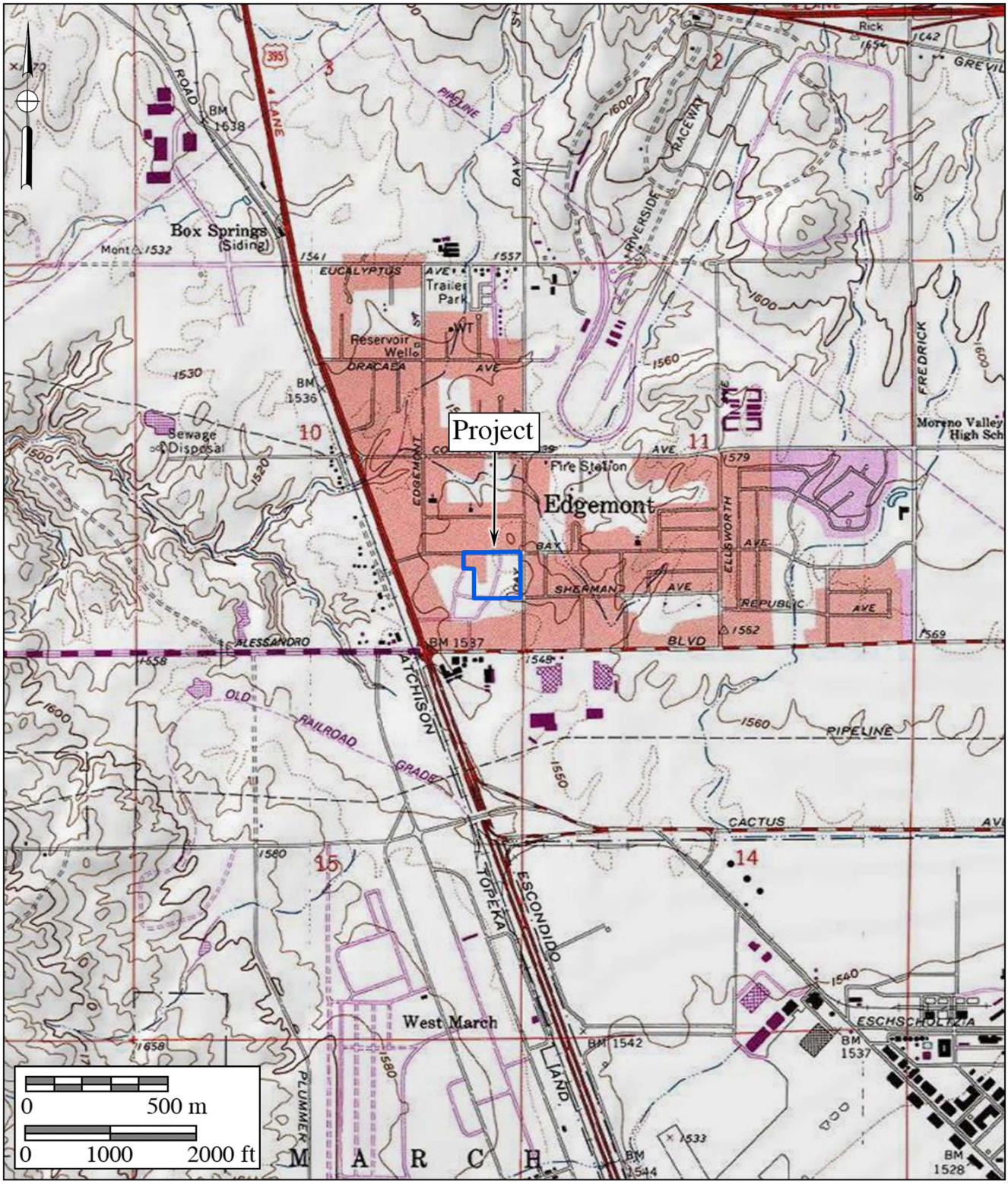
BFSA Environmental Services
A Perennial Company

Figure 1

General Location Map

The Bay & Day Commerce Center Project

DeLorme (1:250,000)



BFSA Environmental Services
A Perennial Company

Figure 2

Project Location Map

The Bay & Day Commerce Center Project

USGS *Riverside East* Quadrangle (7.5-minute series)

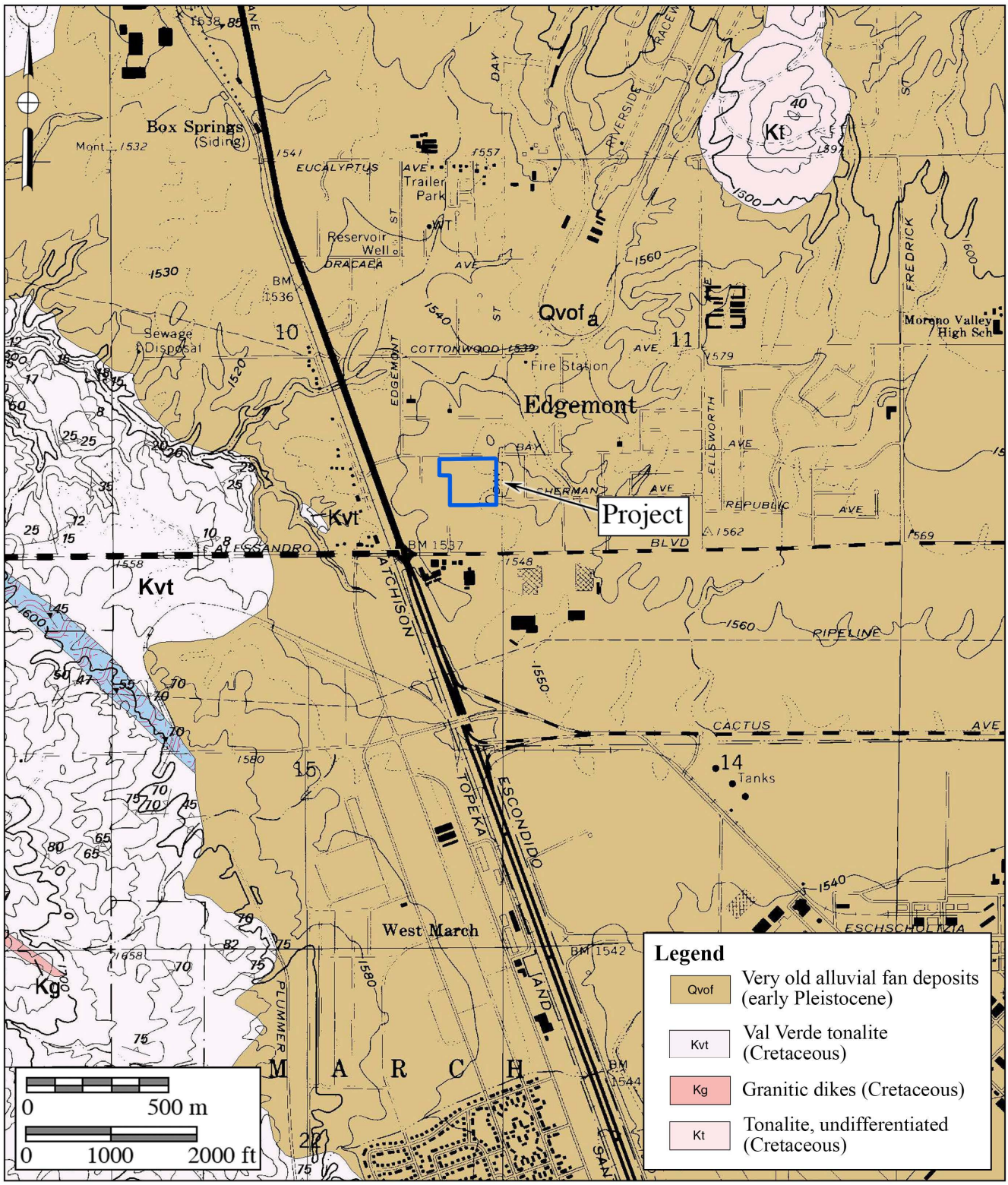
a) A person shall not knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, 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 Moreno Valley

The treatment of paleontological resources and applicable mitigation measures are outlined in Section 4.7.1.5 of the City of Moreno Valley's Draft Environmental Impact Report (DEIR) (RECON Environmental, Inc. 2021). In the DEIR, paleontological sensitivity ratings for the city of Moreno Valley are presented in Figure 4.7-4. In Figure 4.7-4, mapped geological formations within the city limits are assigned one of three levels of paleontological sensitivity: no, low/high, and high. The assigned levels generally follow the mapping of Morton and Cox (2001) (see Section III in this report). The "low/high" assignment is the only level of sensitivity with a definition, where excavations shallower than 10 feet are deemed as having a low potential to impact paleontological resources, while excavations deeper than 10 feet are assigned a high sensitivity (RECON Environmental, Inc. 2021). The DEIR recognizes that earth disturbance activities associated with future development could significantly impact potential paleontological resources. The DEIR's mitigation measure proposing to decrease the level of impact to a level below significant (Mitigation Measure PAL-1) is stated in Section VI in this report.

III. GEOLOGY

Regionally, the project area lies within the Perris Block, a fault-bounded crustal block bounded on the west by the Elsinore fault zone and on the east by the San Jacinto fault zone (Morton and Cox 2001). The geology mapped at the project is lower Pleistocene-aged, very old, sandy alluvial fan deposits (areas labeled "$Qvof_a$" and shown in brown on Figure 3, after Morton and Cox 2001). These sedimentary deposits are described as well-dissected, well-indurated, reddish-brown sand deposits, containing minor gravel, and commonly contain consolidated paleosols. Nearby are Cretaceous plutonic rocks composed of tonalite (areas labeled "Kt" shown in pink in Figure 3).



BFSA Environmental Services
A Perennial Company

Figure 3
Geologic Map

The Bay & Day Commerce Center Project

Geology after Morton and Cox (2001)

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 Search

A paleontological locality records search was conducted for the project by the Western Science Center (WSC; Radford 2021 [see Appendix B]). The records search indicated that the WSC did not have records of fossil localities within one mile of the project, but that Pleistocene-aged fossil vertebrates have been found throughout the region from sedimentary deposits similar to those found at the project.

The closest known fossil localities to the Bay & Day Commerce Center Project are from the Aldi Distribution Center property, located southwest of Highway 60 and Redlands Boulevard in Moreno Valley, approximately six and a half miles east-northeast of the current project. These localities include WSC localities 192, 193, and 194, all of late Pleistocene age, which consist of the remains of a horse (*Equus* sp.), a giant ground sloth (*Megalonyx jeffersonii*), and a llama (*Hemiauchenia* sp.), animals that became extinct in North America at or soon after the end of the Pleistocene epoch, about 11,700 years ago. The depths of the fossils ranged from approximately 11 to 13 feet below the surface. On the geologic map of Morton and Matti (2001), these fossil localities are situated in an area mapped as Holocene and late Pleistocene sandy, gravelly, young alluvial fan deposits ("Qyf") at the surface, which suggests deposits of late Pleistocene age and older (greater than 11,700 years) are present beginning at a depth of less than 11 feet below the surface.

Project Survey

The paleontological resources survey took place on June 14, 2021, and July 18, 2023. The survey was directed by Principal Paleontologist Todd A. Wirths with assistance from field archaeologist David R. Grabski. The survey of the property was an intensive reconnaissance consisting of a series of parallel survey transects spaced at approximately 10-meter intervals, which covered all areas of the project. The entire property was accessible and nearly the entire ground surface was visible. The pedestrian survey indicated that the property has been disturbed by disking and previous land modifications resulting from the historic use of the property. The survey did not result in the identification of any paleontological resources.

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 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, 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 (SVP; 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 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.

Using these criteria, based on the fossil record of the geologic formation at the project and the distribution of nearby fossil localities, the project has a high potential to yield significant paleontological resources.

City of Moreno Valley Assessment

The City of Moreno Valley's DEIR acknowledges that significant impacts to paleontological resources could potentially occur as a result of development within the city limits (RECON Environmental, Inc. 2021). This is based on the project's position within the DEIR's

Paleontological Sensitivity figure, Figure 4.7-4. Within the project boundaries, levels of paleontological sensitivity fairly match the geologic contacts mapped by Morton and Cox (2001) (see Figure 3). Thus, the early Pleistocene, very old, sandy alluvial fan deposits mapped at the project are assigned a high sensitivity, while the nearby Cretaceous tonalitic rocks have no sensitivity. As a result, Mitigation Measure PAL-1 (RECON Environmental, Inc. 2021:4.7-17; see Section VI below) is provided to reduce potential impacts to fossil resources to a level below significant during earth disturbance activities.

VI. CONCLUSION AND RECOMMENDATIONS

Research has confirmed the existence of potentially fossiliferous Pleistocene very old alluvial fan deposits mapped across the project ("$Qvof_a$" on Figure 3). There are documented occurrences of terrestrial vertebrate fossils at shallow depths from Pleistocene old alluvial fan sediments across the Inland Empire of western Riverside County. These facts, combined with the "High" paleontological sensitivity rating typically assigned to Pleistocene very old alluvial fan sediments, support the recommendation that paleontological monitoring be required during mass grading, trenching, and excavation activities at the project in undisturbed Pleistocene very old alluvial fan sediments in order to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources. Monitoring is recommended on a full-time basis for excavations exceeding five feet in depth in undisturbed deposits at the Bay & Day Commerce Center Project. Therefore, Mitigation Measure PAL-1 in the City of Moreno Valley's DEIR is applicable to the project, presented below:

> **PAL-1:** Applications for future development, wherein the Community Development Director or his or her designee has determined a potential for impacts to paleontological resources, shall review the underlying geology and paleontological sensitivity of the site. If it is determined that the potential exists that sensitive paleontological resources are present, the applicant shall be required to comply with the following mitigation framework.
>
> A qualified paleontological monitor shall be present during grading in project areas where a project specific technical study has determined that such monitoring is necessary due to the potential for paleontological resources to reside within the underlying geologic formations. The geologic technical study shall also provide specific duties of the monitor, and detailed measures to address fossil remains, if found. (RECON Environmental, Inc. 2021)

The submittal and approval of a Paleontological Resource Impact Mitigation Program (PRIMP) is recommended prior to issuance of grading permits. The recommendation of a PRIMP is based on the findings and conclusions stated above. The specific guidelines contained within a PRIMP are listed below, which are consistent with the provisions of CEQA, the City of Moreno Valley, and the guidelines of the SVP (2010) for any mass grading and excavation-related activities, including utility trenching, during construction within the project. If implemented, the PRIMP would mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources (fossils), if present, to less than significant. The PRIMP should include methods for:

- Attendance by a qualified paleontologist at the preconstruction meeting to consult with the grading and excavation contractors.
- On-site presence of a paleontological monitor to inspect for paleontological resources during the excavation of undisturbed deposits.
- Salvage and recovery of paleontological resources by the qualified paleontologist or paleontological monitor.
- Preparation (repair and cleaning), sorting, and cataloguing of recovered paleontological resources.
- Donation of prepared fossils, field notes, photographs, and maps to a scientific institution with permanent paleontological collections.
- Completion of a final summary report that outlines the results of the mitigation program.

All mitigation programs shall be performed by a qualified professional paleontologist, defined as an individual with a M.S. or Ph.D. in paleontology or geology who has proven experience in Riverside 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.

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.

February 20, 2024

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

Date

VIII. REFERENCES

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 Cox, B. 2001. Geologic map of the Riverside East 7.5' quadrangle, Riverside County, California: U. S. Geological Survey Open-File Report 01-452, scale 1:24,000.

Morton, D.M. and Matti, J.C. 2001. Geologic map of the Sunnymead 7.5' Quadrangle, Riverside County, California: U.S. Geological Survey Open-File Report 01-450, scale 1:24,000.

Radford, D. 2021. Untitled letter of fossil record search results for the Edgemont [now Bay & Day] Commerce Center Project. Prepared for Brian F. Smith and Associates, Inc., Poway, California, by Western Science Center, Hemet, California. (attached)

RECON Environmental, Inc. 2021. Draft Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive General Plan Update, Housing Element Update, and Climate Action Plan, SCH No. 2020039022. Prepared for the City of Moreno Valley. Electronic document, http://www.moval.org/cdd/documents/general-plan-documents-deir.html.

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

BFSA Environmental Services, A Perennial Company
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: 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 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

Fossil Locality Search Report

WESTERN SCIENCE CENTER

Brain F. Smith and Associates, Inc.
Todd Wirths
14010 Poway Road, Suite A
Poway, CA 92064

June 24, 2021

Dear Mr. Wirths,

This letter presents the results of a record search conducted for the Edgemont Commerce Center Project in the city of Moreno Valley, Riverside County, California. The project site is located south of Bay Avenue, west of Day Street, north of Alessandro Avenue and east of Interstate 215 in Section 10 of Township 3 South and Range 4 West on the *Riverside East, CA* USGS 7.5 minute topographic quadrangles.

The geologic unit underlying the project area is mapped entirely as very old alluvial fan deposits dating to the early Pleistocene epoch (Morton et al., 2002). Pleistocene alluvial units are considered to be of high paleontological sensitivity. The Western Science Center does not have localities within the project area or a one mile radius, but does have numerous localities throughout the region in similarly mapped sediments. Southern California Pleistocene units are well known to produce fossil localities and specimen including those associated with mammoth (*Mammuthus columbi*), mastodon (*Mammut pacificus*) sabertooth cats (*Smilodon fatalis*), ancient horse (*Equus sp*.) and many other Pleistocene megafauna and microfauna.

Any fossils recovered from the Edgemont Commerce Center Project area would be scientifically significant. Excavation activity associated with development of the area has the potential to impact the paleontologically sensitive early Pleistocene units and it is the recommendation of the Western Science Center that a paleontological resource mitigation plan be put in place to monitor, salvage, and curate any recovered fossils associated with the current study area.

If you have any questions, or would like further information, please feel free to contact me at dradford@westerncentermuseum.org

Sincerely,

Darla Radford
Collections Manager