PALEONTOLOGICAL ASSESSMENT FOR THE COMPASS DANBE CENTERPOINTE PROJECT

MORENO VALLEY, RIVERSIDE COUNTY

APNs 297-170-002 and -003

Prepared for:

T&B Planning, Inc.
3200 El Camino Real, Suite 100
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Submitted to:

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

Prepared by:

Brian F. Smith and Associates, Inc.
14010 Poway Road, Suite A
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September 28, 2020

Paleontological Database Information

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Report Date:	September 28, 2020
Report Title:	Paleontological Assessment for the Compass Danbe Centerpointe Project, Moreno Valley, Riverside County (APNs 297-170-002 and -003)
Prepared for:	T&B Planning, Inc. 3200 El Camino Real, Suite 100 Irvine, California 92602
Submitted to:	City of Moreno Valley Community Development Department Planning Division 14177 Frederick Street Moreno Valley, California 92552
Prepared by:	Brian F. Smith and Associates, Inc. 14010 Poway Road, Suite A Poway, California 92064
USGS Quadrangle:	*Riverside East, California* (7.5 minute)
Study Area:	17.7 acres
Key Words*:*	Paleontological assessment; High paleontological resource sensitivity; Riverside County; city of Moreno Valley.

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I. INTRODUCTION AND LOCATION

This paleontological assessment report has been completed for the Compass Danbe Centerpointe Project, identified as Assessor's Parcel Numbers 297-170-002 and -003, is located along the south side of Alessandro Boulevard between Frederick and Graham streets in the city of Moreno Valley, Riverside County, California (Figures 1 and 2). On the U.S. Geological Survey, 7.5-minute, 1:24,000-scale *Riverside East, California* topographic quadrangle map, the project is located in the northeast quarter of Section 13, Township 3 South, Range 4 West, San Bernardino Base and Meridian, at an elevation of approximately 1,570 feet. Proposed improvements, which will cover approximately 17.7 acres of the project, include the construction of two industrial warehouse buildings with associated parking and infrastructure.

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 the Guidelines for the Implementation of CEQA, as amended March 29, 1999 (Title 1, Chapter 3, California Code of Regulations: 15000 et seq.), procedures define the type of activities, persons, and public agencies required to comply with CEQA. In the Environmental Checklist, one of the questions to answer is, "Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (Section 15023, Appendix G, Section XIV, Part a). California Public Resources Code Section 5097.5 states:

a) No person shall 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. Violation of this section is a misdemeanor.
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.

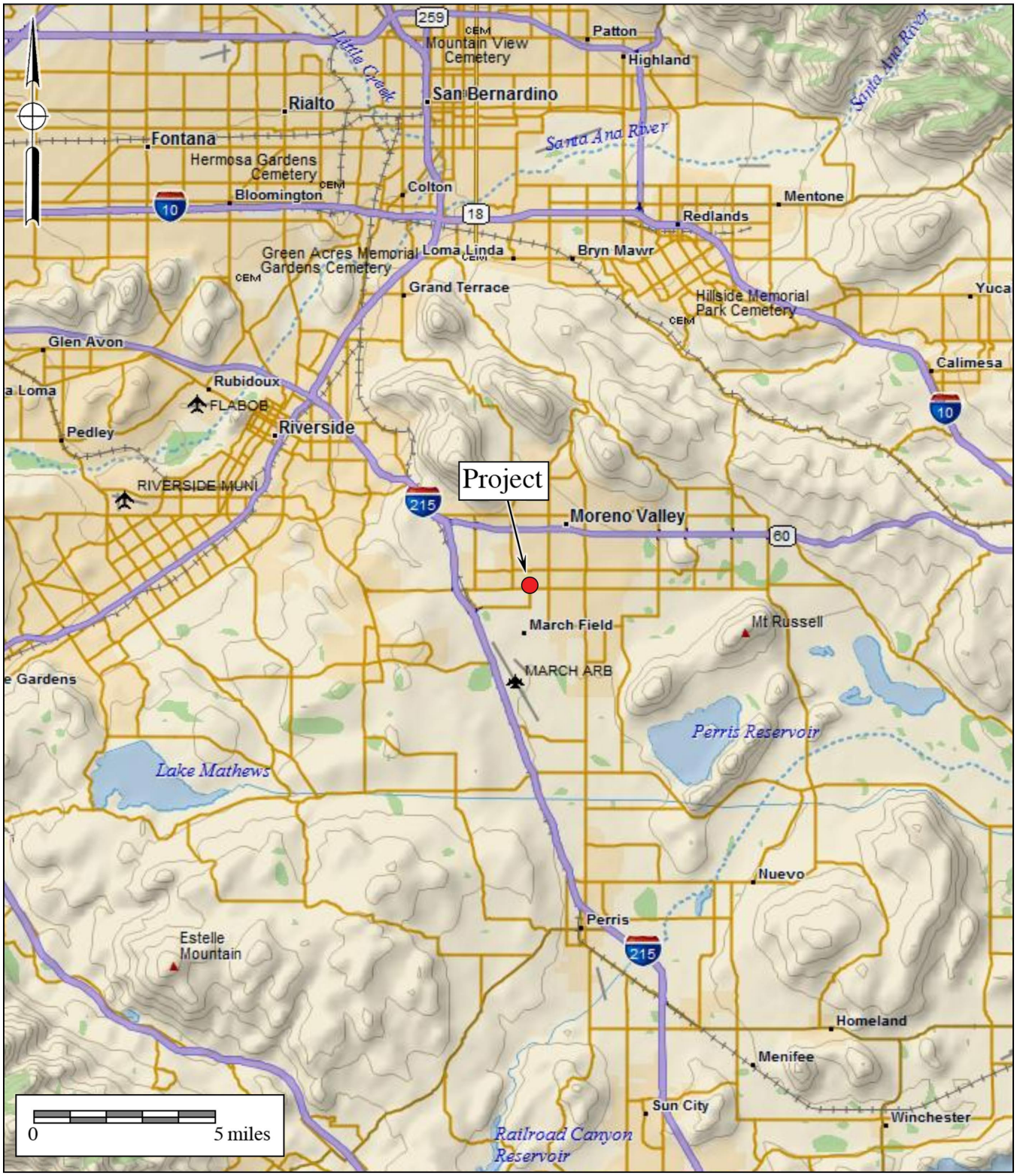


Figure 1

General Location Map

The Compass Danbe Centerpointe Project

DeLorme (1:250,000)

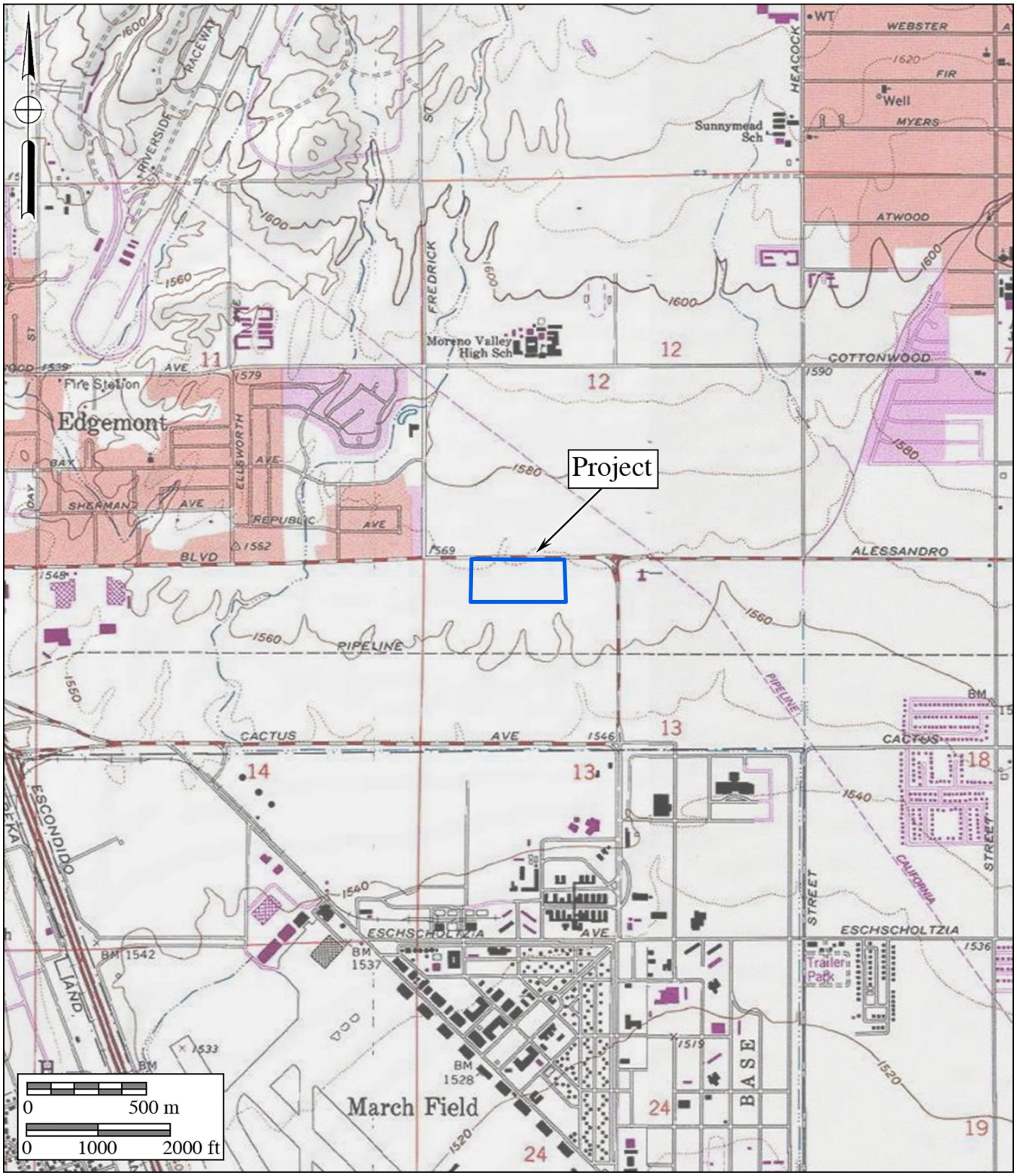


Figure 2

Project Location Map

The Compass Danbe Centerpointe Project

USGS *Riverside East* and *Sunnymead* Quadrangles (7.5-minute series)

City of Moreno Valley

The treatment of paleontological resources and applicable mitigation measures are outlined in Section 5.10 of the City of Moreno Valley's Final Environmental Impact Report (FEIR) (City of Moreno Valley 2006). In the FEIR, "Paleontological Resource Sensitive Areas" are presented as Figure 5.10-3. In Figure 5.10-3, all areas west of Gilman Springs Road, and therefore most of the city limits including the project property, are shown as having a "low potential" for fossil resources; however, what constitutes an area of "low potential" is not provided. The areas with a "high potential" are limited to the outcrops of the fossiliferous Mt. Eden Formation and San Timoteo Formation, which occur in the San Timoteo Badlands (*i.e.,* east of Gilman Springs Road). Since significant impacts to paleontological resources could potentially occur if the City of Moreno Valley's General Plan is implemented, the FEIR presents a mitigation measure that would reduce impacts to a level below that of significant. This measure is presented in Section VI of this report.

III. GEOLOGY

The geology mapped underlying the project and immediate area indicates that the property is underlain by lower Pleistocene (approximately 1.8 million- to perhaps 200,000- to 300,000-year-old), very old, sandy alluvial fan deposits (areas labeled "$Qvof_a$" and shown in brown on Figure 3 [after Morton and Cox 2001; Morton and Matti 2001]). These sedimentary deposits are described as:

> … mostly well dissected, well-indurated, reddish-brown sand deposits. Commonly contains duripans and locally silcretes. Forms widespread deposits north and south of Moreno Valley, flanking bedrock areas. Deposits on older erosion surfaces lack diagnostic features, and may or may not be alluvial fan deposits. (Morton and Matti 2001)

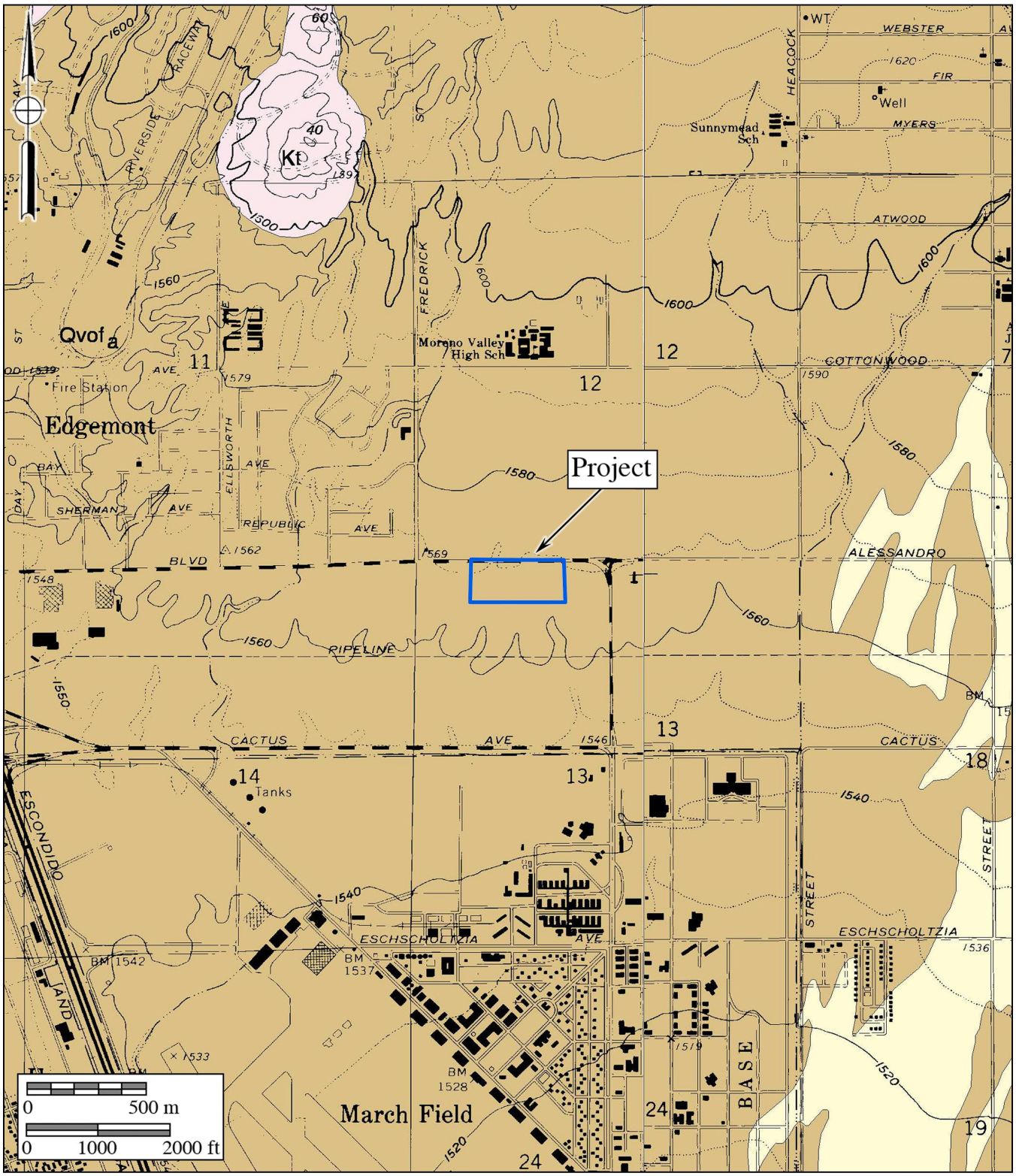


Figure 3

Geologic Map

The Compass Danbe Centerpointe Project

Geology after Morton and Cox (2001) and Morton and Matti (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), for example, when viewed in the context of local extinction of the organism or habitat. Fossils are considered a nonrenewable resource under state, county, and city guidelines (see Section II of this report).

Fossil Records Search

Based upon a paleontological literature review and a collections and records search conducted by the Geological Sciences Division of the San Bernardino County Museum in Redlands, California for the nearby Moreno Valley Logistics Center Project, older Pleistocene alluvial fan deposits ("$Qvof_a$" on Figure 3) have a high potential to contain significant nonrenewable paleontological resources (*i.e.,* fossils) and were assigned a "high paleontological resource sensitivity" (see Scott 2015 in Appendix B). Similar older Pleistocene sediments throughout the lowland (valley) areas of western Riverside County and the Inland Empire have been reported to yield significant fossils of extinct terrestrial mammals from the last Ice Age (see references in Scott 2015), such as mammoths, mastodons, giant ground sloths, dire wolves, short-faced bears, saber-toothed cats, large and small horses, camels, and bison.

A fossil records search for the Canyon Steele Industrial Building Project, which is about 4.5 miles south of the subject property in the city of Perris, was performed by the Western Science Center (WSC) in Hemet, California, as part of a paleontological assessment conducted by CRM Tech (Radford 2018). Radford (2018) indicates that the closest WSC fossil localities to the Canyon Steele Industrial Building Project are from the Aldi Distribution Center, which is located southwest of Highway 60 and Redlands Boulevard in Moreno Valley, approximately five and a half miles east-northeast of the Compass Danbe Centerpointe Project. These localities include WSC locs. 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 (Darla Radford, personal communication 2020). 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 Quaternary (Holocene and late Pleistocene), sandy, gravely, 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.

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. Late Quaternary (Holocene, or "modern") 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. Older 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 (Scott 2015). These Pleistocene sediments are thus accorded a High paleontological resource sensitivity.

Professional Standard

The Society of Vertebrate Paleontology (2010) drafted guidelines outlining procedures that include:

> [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.

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.

Riverside County Assessment

A "paleontological sensitivity map" generated by the Riverside County Transportation and Land Management Agency in September 2020 (see Figure 4) ranks the entire project as having a High Paleontological Potential/Sensitivity (High B), which is:

> [E]quivalent to High A, but is based on the occurrence of fossils at a specified depth below the surface. The category High B indicates that fossils are likely to be encountered at or below four feet of depth, and may be impacted during excavation by construction activities. (County of Riverside 2020)

The category "High B" indicates that fossils are likely to be encountered at or below four feet of depth and may be impacted during excavation by construction activities. Alluvial valley sediments and very old alluvial fan sediments with a High Potential/Sensitivity (High B) to yield nonrenewable paleontological resources (*i.e.,* fossils) are shown in amber tint on Figure 4.

City of Moreno Valley Assessment

The City of Moreno Valley General Plan acknowledges that significant impacts to paleontological resources could potentially occur as a result of development within the city limits (City of Moreno Valley 2006). As a result, Mitigation Measure C1 (City of Moreno Valley 2006:5.10-15; see Section VI, below) is provided to reduce potential impacts to fossil resources (as well as historic and prehistoric archeological sites) to a level below significant during earth disturbance activities. However, the FEIR's statement addressing potential impacts to paleontological resources is not entirely clear as to whether the mitigation measures are stipulated exclusively for the fossiliferous, geologic formations that occur in the Badlands areas at the far eastern extent of the city limits (specifically, the Mt. Eden Formation and San Timoteo Formation), or for the greater Moreno Valley area. In addition, the FEIR seems to state that the Mt. Eden Formation and San Timoteo Formation underlie the alluvium found across much of the city, when it is most likely granitic rocks, such as the outcrop of tonalite about a mile north of the project, that comprise the bedrock formation. Furthermore, the FEIR assumes the age of the surficial alluvial deposits is "recent," which is incorrect (see Section III, above).

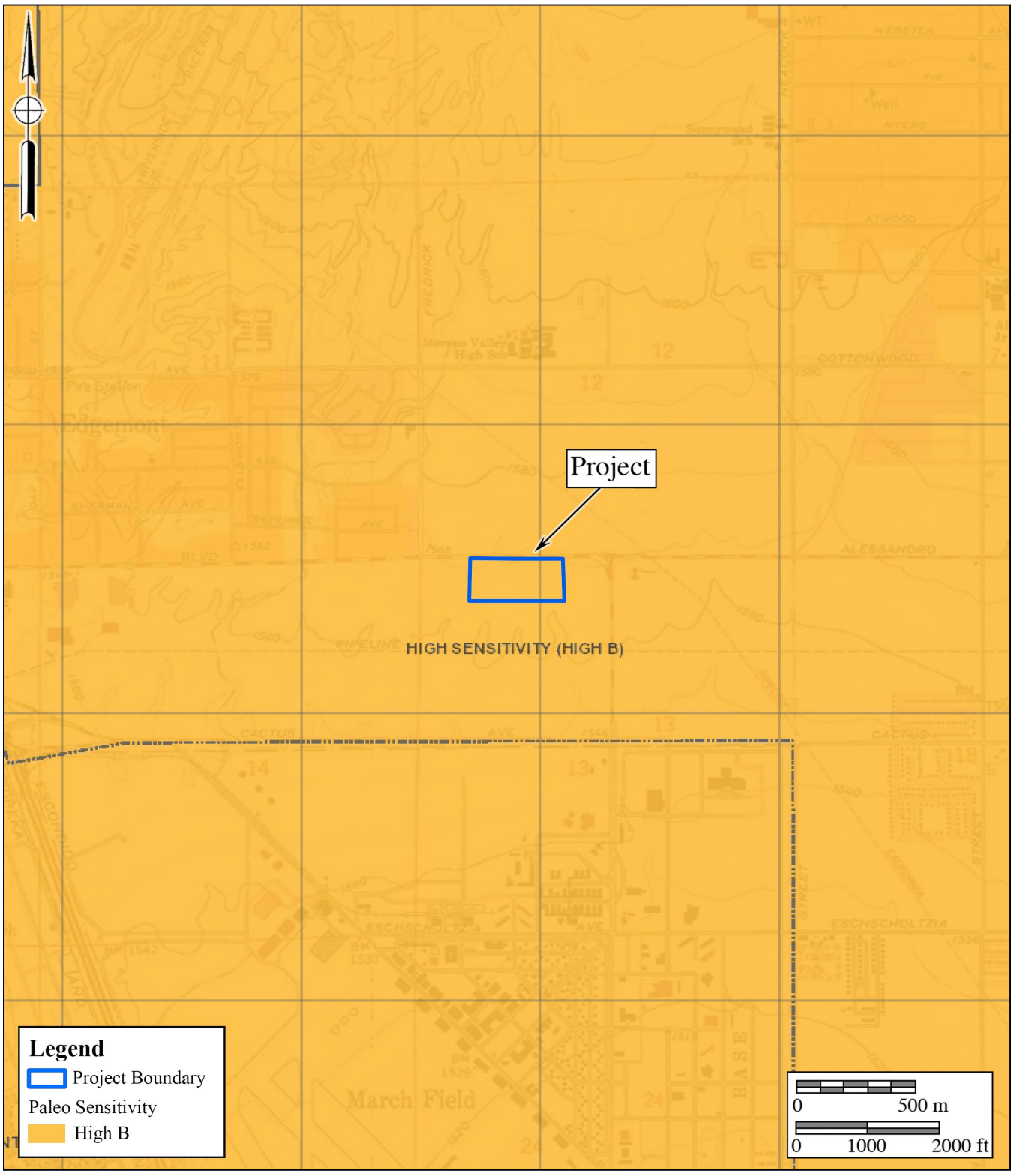


Figure 4

Paleontological Sensitivity Map

The Compass Danbe Centerpointe Project

After Riverside County Land Information System

VI. RECOMMENDATIONS

The existence of potentially fossiliferous Quaternary very old alluvial fan deposits mapped across the project ($Qvof_a$ on Figure 3 in Appendix B); the known occurrence of terrestrial vertebrate fossils at relatively shallow depths from Quaternary older alluvial fan sediments across the Inland Empire of western Riverside County; and the High Paleontological Potential/Sensitivity (High B) typically assigned to Quaternary older alluvial fan sediments all support the recommendation that paleontological monitoring be required during mass grading, trenching, and excavation activities in undisturbed, Quaternary, older 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 Compass Danbe Centerpointe Project. Mitigation Measure C1 listed in the City of Moreno Valley's FEIR is presented below:

> **C1.** Prior to the approval of a project, the City will assess potential impacts to significant historic, prehistoric archaeological, and paelontological [*sic*] resources, including impacts to human remains, pursuant to Section 15064.5 of the California Environmental Quality Act Guidelines. If significant impacts are identified, the City will require the project to be modified to avoid the impacts, or require measures to mitigate the impacts. Mitigation may involve monitoring, resource recovery, documentation or other measures. (City of Moreno Valley 2006:5.10-16)

Should the City of Moreno Valley Planning Division identify a potential for impacts to paleontological resources at a level above significant at the project, a proposed Mitigation Monitoring and Reporting Program (MMRP) is proposed below. When implemented with the provisions of CEQA, Scott (2015), the City of Moreno Valley (2006), 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) Monitoring of mass grading and excavation activities in areas identified as likely to contain paleontological resources by a qualified paleontologist or paleontological monitor. Full-time monitoring will be conducted in areas of grading or excavation in undisturbed, very old alluvial fan sediments ($Qvof_a$ on Figure 3), starting at a depth of five feet below the surface. 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 upon exposure and examination by qualified paleontological personnel to have a low potential to contain or yield fossil resources.

2) Paleontological salvage during trenching and boring activities is typically from the generated spoils and does not delay the trenching or drilling activities. Fossils are collected and placed in cardboard flats or plastic buckets and identified by field number, collector, and date collected. Notes are taken on the map location and stratigraphy of the site, and the site is photographed before it is vacated and the fossils are removed to a safe place. On mass grading projects, any discovered fossil site is protected by red flagging to prevent it from being overrun by earthmovers (scrapers) before salvage begins. Fossils are collected in a similar manner, with notes and photographs being taken before removing the fossils. Precise location of the site is determined with the use of handheld Global Positioning System units. If the site involves a large terrestrial vertebrate, such as large bone(s) or a mammoth tusk, that is/are too large to be easily removed by a single monitor, Brian F. Smith and Associates, Inc. (BFSA) will send a fossil recovery crew in to excavate around the find, encase the find within a plaster jacket, and remove it after the plaster is set. For large fossils, use of the contractor's construction equipment is solicited to help remove the jacket to a safe location before it is returned to the BFSA laboratory facility for preparation.
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. 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).
4) Preparation of recovered specimens 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.
5) Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage (*e.g.,* the WSC, 2345 Searl Parkway, Hemet, California 92543). The paleontological program should include a written repository agreement prior to the initiation of mitigation activities.

6) Preparation of a final monitoring and mitigation report of findings and significance, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location. The report, when submitted to the appropriate lead agency (City of Moreno Valley), will signify satisfactory completion of the project program to mitigate impacts to any paleontological resources.
7) Decisions regarding the intensity of the MMRP will be made by the project paleontologist based upon the significance of the paleontological resources and their biostratigraphic, biochronologic, paleoecologic, taphonomic, and taxonomic attributes, not upon the ability of a project proponent to fund the MMRP.

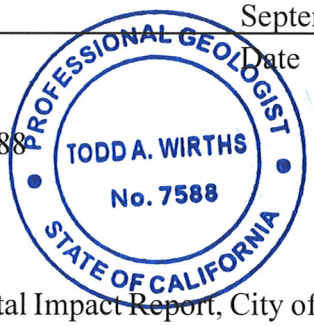
VII. CERTIFICATION

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.

September 28, 2020

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

Date



VIII. REFERENCES

City of Moreno Valley. 2006. Final Environmental Impact Report, City of Moreno Valley General Plan, Volume I, July 2006, SCH# 200091075. Electronic document, http://www.moreno-valley.ca.us/city_hall/general-plan/06gpfinal/ieir/eir-tot.pdf.

County of Riverside. 2020. Map My County; Paleontological Sensitivity. https://gis.countyofriverside.us/Html5Viewer/?viewer=MMC_Public.

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. 2018. Untitled letter of fossil record search results for the Canyon Steele Industrial Building Project, *in* Appendix 2 of Quinn, H.M., and Richards, M.D., 2018, Paleontological Resources Assessment, Canyon Steele Industrial Building Project, City of Perris, Riverside County, California. Unpublished consulting report prepared for Carter

Group Architects, Inc., San Clemente, California, by CRM Tech, Colton, California.

Scott, E.G. 2015. Paleontology literature and records review, Moreno Valley Logistics Center, City of Moreno Valley, Riverside County, California. Unpublished report prepared for Brian F. Smith and Associates, Poway, by the Division of Geological Sciences, San Bernardino County Museum, Redlands (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, http://vertpaleo.org/Membership/Member-Ethics/SVP_Impact_Mitigation_Guidelines.aspx.

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

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 Eastvale Self Storage Project, City of Eastvale, Riverside County, California.* Prepared for Gossett Development, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Resource Impact Mitigation Monitoring Program for the IPT Perris DC III Western/Nandina Project, Perris, Riverside County, California.* Prepared for IPT/Black Creek Group. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Assessment for the 10407 Elm Avenue Project, City of Fontana, San Bernardino County, California*. Prepared for Advantage Environmental Consultants, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

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 Resource Impact Mitigation Program (PRIMP) for the Speedway TPM 37676 Project, Temescal Valley, Riverside County, California.* Prepared for Speedway Development. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Assessment for the Natwar Project, Perris, Riverside County, California.* Prepared for Advantage Environmental Consultants, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Resource and Mitigation Monitoring Assessment, Beyond Food Mart, City of Perris, Riverside 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 West Markham Project (TR 33587), City of Perris, Riverside County, California*. Prepared for Markham JP/ARA, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Monitoring and Mitigation Report for the Artesa at Menifee Town Center Project Site, Sherman Road and La Piedra Road, Menifee, Riverside County, California.* Prepared for MBK Real Estate. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Monitoring Report, Diarq Residence, La Jolla, City of San Diego, San Diego County, California.* Prepared for West Way Drive, LLC. 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.

APPENDIX B

Record Search Report

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www.SBCounty.gov

SAN BERNARDINO COUNTY

Museum

Leonard X. Hernandez
Interim Museum Director

12 March 2015

Brian F. Smith and Associates
attn: George L. Kennedy, Ph.D., Senior Paleontologist
14010 Poway Road, Suite A
Poway, CA 92064

re: **PALEONTOLOGY LITERATURE AND RECORDS REVIEW, MORENO VALLEY LOGISTICS CENTER, CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA**

Dear Dr. Kennedy,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named project in the City of Moreno Valley, Riverside County, California. Specifically, the proposed study area is located in the southwestern quadrant of section 30, Township 3 South, Range 3 West, San Bernardino Base and Meridian, as seen on the Perris, California and the Sunnymead, California 7.5' United States Geological Survey topographic quadrangle maps (1967 editions, photorevised 1973 and 1980, respectively).

Previous mapping of the proposed property (Rogers, 1965; Morton and Matti, 2001; Morton, 2003) indicates that the study area is situated entirely upon surface exposures of early Pleistocene alluvial fan deposits (= unit **$Qvof_a$**). These Pleistocene fan deposits may have high paleontologic sensitivity, depending upon their lithology. Pleistocene alluvium elsewhere throughout Riverside County and the Inland Empire has repeatedly been reported to yield significant fossils of extinct animals from the Ice Age (Jefferson, 1991; Reynolds, 1991; Anderson and others, 2002; Scott and Cox, 2008; Springer and others, 2009, 2010; Scott, 2010). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, sabre-toothed cats, large and small horses, large and small camels, and bison (Jefferson, 1991; Reynolds, 1991; Scott and Cox, 2008; Springer and others, 2009, 2010; Scott, 2010), as well as plant macro- and microfossils (Anderson and others, 2002). If not previously disturbed by development, and depending upon the lithology exhibited, these sediments have high potential to contain significant nonrenewable paleontologic resources.

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously-recorded fossil resource

localities from Pleistocene older alluvium are present within the boundaries of the proposed development property, nor from at least within one mile in any direction.

Recommendations

The results of the literature review and the search of the RPLI at the SBCM demonstrate that the proposed study area is situated upon Pleistocene older alluvial deposits that, if not previously disturbed by development and depending upon their lithology, have high potential to contain paleontologic resources. Excavation in this older alluvium therefore has high potential to impact paleontologic resources. A qualified vertebrate paleontologist must develop a program to mitigate impacts to nonrenewable paleontologic resources. This mitigation program must be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of Riverside. This program should include, but not be limited to:

1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Areas requiring monitoring include all previously-undisturbed Pleistocene older alluvial sediments present, at the surface or at depth, within the boundaries of the property. Paleontologic monitors should 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. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced or eliminated if the potentially-fossiliferous units described herein are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

2. Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential in order to fully mitigate adverse impacts to the resources (Scott and others, 2004).

3. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage. These procedures are also essential steps in effective paleontologic mitigation (Scott and others, 2004) and CEQA compliance (Scott and Springer, 2003). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not complete until such curation into an established, accredited museum repository has been fully completed and documented.

4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum

repository, would signify completion of the program to mitigate impacts to paleontologic resources.

References

Anderson, R.S., M.J. Power, S.J. Smith, K.B. Springer and E. Scott, 2002. Paleoecology of a Middle Wisconsin deposit from southern California. Quaternary Research 58(3): 310-317.

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.

Morton, D.M., 2003. Preliminary geologic map of the Perris 7.5' quadrangle, Riverside County, California, version 1.0. United States Geological Survey Open-File Report 03-270. Digital preparation by K.R. Bovard and R.M. Alvarez.

Morton, D.M. and J.C. Matti, 2001. Geologic map of the Sunnymead 7.5' quadrangle, Riverside County, California, version 1.0. United States Geological Survey Open-File Report 01-450. Digital preparation by V.M. Diep and U. Edwards-Howells.

Reynolds, S.F.B. and R.L. Reynolds, 1991. The Pleistocene beneath our feet: near-surface Pleistocene fossils in inland southern California basins. *In* M.O. Woodburne, S.F.B. Reynolds, and D.P. Whistler (eds.), Inland Southern California: the last 70 million years. Redlands: San Bernardino County Museum Special Publication 38(3&4): 41-43.

Rogers, T.H., 1965. Geologic map of California, Santa Ana sheet. California Division of Mines and Geology. Scale 1:250,000.

Scott, E., 2010. Extinctions, scenarios, and assumptions: changes in latest Pleistocene large herbivore abundance and distribution in western North America. *In* E. Scott and G. McDonald (eds.), Faunal dynamics and extinction in the Quaternary: Papers honoring Ernest L. Lundelius, Jr. Quaternary International 217: 225-239.

Scott, E. and S.M. Cox, 2008. Late Pleistocene distribution of *Bison* (Mammalia; Artiodactyla) in the Mojave Desert of southern California and Nevada. *In* X Wang and L.G. Barnes (eds.), Geology and Vertebrate Paleontology of Western and Southern North America, Contributions in Honor of David P. Whistler. Natural History Museum of Los Angeles County Science Series No. 41, p. 359 - 382.

Scott, E. and K. Springer, 2003. CEQA and fossil preservation in southern California. The Environmental Monitor, Fall 2003, p. 4-10, 17.

Scott, E., K. Springer and J.C. Sagebiel, 2004. Vertebrate paleontology in the Mojave Desert: the continuing importance of "follow-through" in preserving paleontologic resources. *In* M.W. Allen and J. Reed (eds.) The human journey and ancient life in California's deserts: Proceedings from the 2001 Millennium Conference. Ridgecrest: Maturango Museum Publication No. 15, p. 65-70.

Springer, K., E. Scott, J.C. Sagebiel, and L.K. Murray, 2009. The Diamond Valley Lake local fauna: late Pleistocene vertebrates from inland southern California. *In* L.B. Albright III (ed.), Papers on geology, vertebrate paleontology, and biostratigraphy in honor of Michael O. Woodburne. Museum of Northern Arizona Bulletin 65:217-235.

Springer, K., E. Scott, J.C. Sagebiel, and L.K. Murray, 2010. Late Pleistocene large mammal faunal dynamics from inland southern California: the Diamond Valley Lake local fauna. *In* E. Scott and G. McDonald (eds.), Faunal dynamics and extinction in the Quaternary: papers honoring Ernest L. Lundelius, Jr. Quaternary International 217: 256-265.

Please do not hesitate to contact us with any further questions you may have.

Sincerely,

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