PALEONTOLOGICAL ASSESSMENT FOR THE TTM 20670 CENTER PROJECT

CITY OF ONTARIO, SAN BERNARDINO COUNTY, CALIFORNIA

APNs 0216-312-02 through -10

Prepared for:

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Submitted to:

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Prepared by:

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April 15, 2024

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Paleontological Database Information

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Report Title:	Paleontological Assessment for the TTM 20670 Project, City of Ontario, San Bernardino County, California
Prepared for:	EPD Solutions, Inc. 3333 Michelson Drive, Suite 500 Irvine, California 92612
Submitted to:	City of Ontario Planning Department 303 East B Street Ontario, California 91764
USGS Quadrangle:	Santa Ana Del Chino (addition to) land grant and Section 15, Township 2 South, Range 7 West of the *Guasti, Ontario,* and *Corona North, California* (7.5-minute) USGS Quadrangles
Assessor's Parcel Numbers:	0216-312-02 through -10
Study Area:	Approximately 75-acre project and approximately three acres of off-site infrastructure improvements
Key Words:	Paleontological assessment; high paleontological resource sensitivity; full-time monitoring recommended.

Table of Contents

Section **Page**

I. INTRODUCTION AND LOCATION 1
II. REGULATORY SETTING....1
State of California....1
City of Ontario....4
III. GEOLOGY 5
IV. PALEONTOLOGICAL RESOURCES....7
Definition....7
Fossil Locality Records Search 7
Project Survey 8
V. PALEONTOLOGICAL SENSITIVITY 8
Overview 8
Professional Standards 9
City of Ontario Assessment of Paleontological Sensitivity....9
VI. CONCLUSION AND RECOMMENDATIONS 9
Paleontological Monitoring Plan 10
VII. CERTIFICATION 12
VIII. REFERENCES 13

Appendices

Appendix A – Qualifications of Key Personnel

List of Figures

Figure **Page**

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

I. INTRODUCTION AND LOCATION

A paleontological resource assessment has been completed for the TTM 20670 Project, located within the city of Ontario, San Bernardino County, California (Figures 1 and 2). The approximately 75-acre TTM 20670 Project, bound by Schaefer, Edison, and Walker Avenues, consists of nine parcels (Assessor's Parcel Numbers [APNs] 0216-312-02 through -10), and includes approximately three acres of off-site infrastructure improvements. The project is located within the former Santa Ana Del Chino (addition to) land grant and Section 15 within Township 2 South, Range 7 West, as shown on the USGS 1:24,000-scale (7.5-minute) *Guasti*, *Ontario*, and *Corona North, California* topographic quadrangle maps (Figure 2). As designed, the applicant proposes to clear the property for the construction of a residential development while off-site improvements include water, sewer, and storm drain utilities situated along Schaefer, Edison, and Walker Avenues and the proposed expansion of Comet Avenue along the western boundary of the project. Historically, the property was utilized for agriculture, primarily dairy farming. At present, the property contains a plant nursery and a tractor-trailer yard.

As the lead agency, the City of Ontario 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.

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

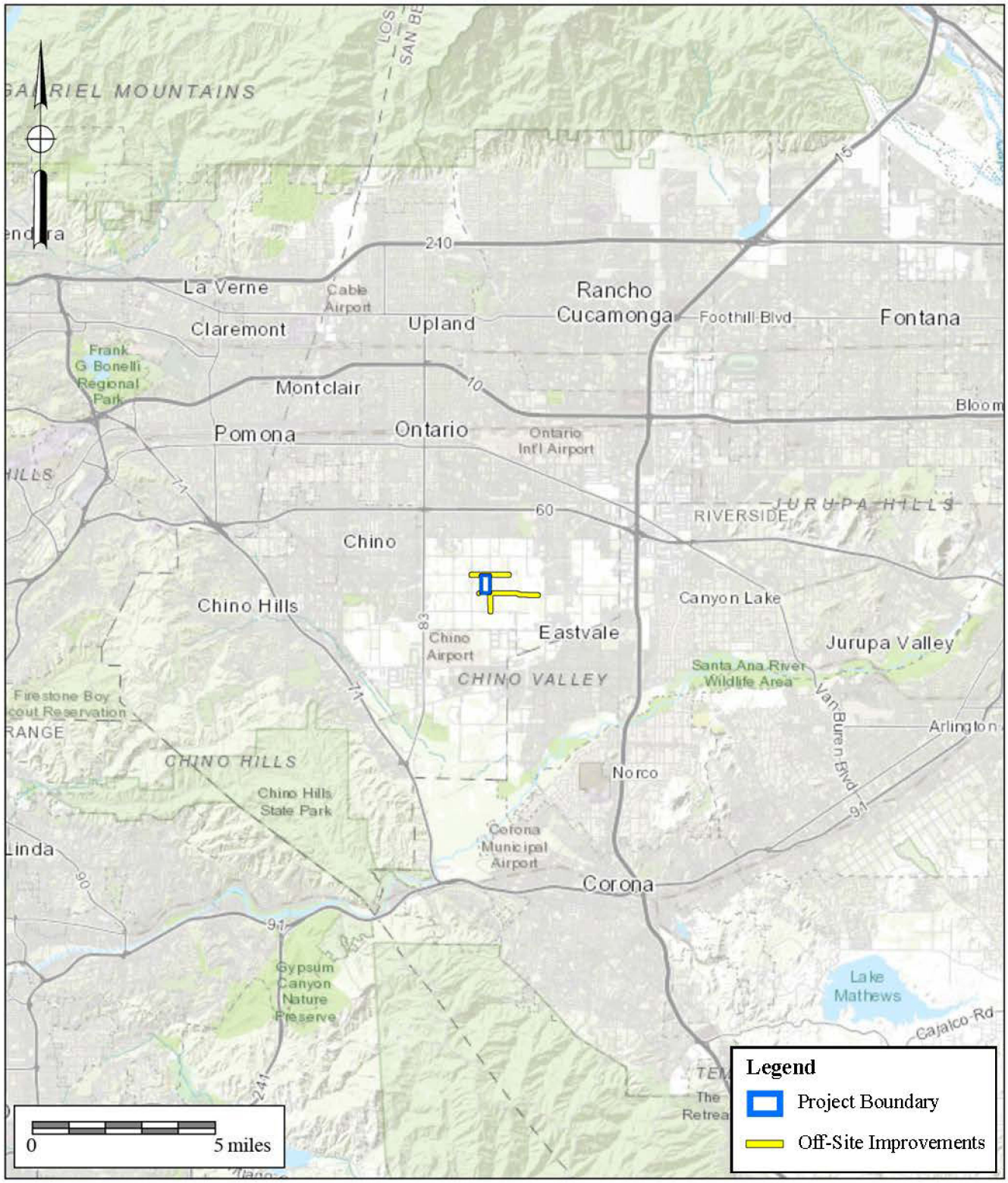

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Figure 1
General Location Map
The TTM 20670 Project
ESRI (1:250,000 series)

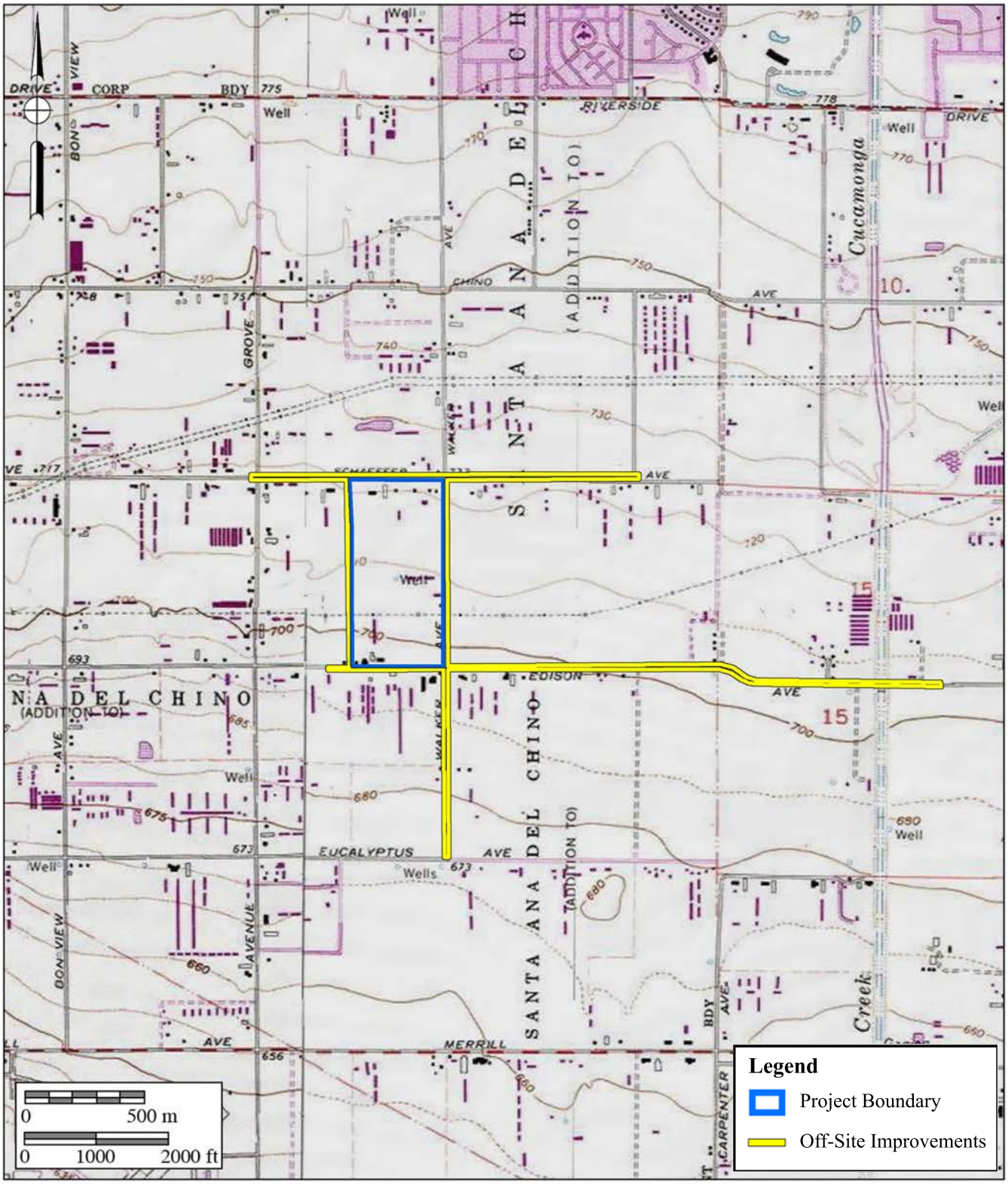

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Figure 2
Project Location Map

The TTM 20670 Project

USGS *Guasti, Ontario,* and *Corona North* Quadrangle (7.5-minute series)

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, which is 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 Ontario

The Ontario Plan (TOP) 2050 Final Supplemental Environmental Impact Report (FSEIR) sets forth goals and policies for the City to manage future growth and land uses. According to Impact 5.7-6 of the FSEIR,

> Ontario is underlain by deposits of Quaternary and upper-Pleistocene sediments deposited during Pliocene and early Pleistocene time. Quaternary Older Alluvial sediments may contain significant, nonrenewable, paleontological resources and are therefore considered to have high sensitivity. Older Pleistocene alluvial sediments can yield fossil remains, often found at depths of 10 feet or more below existing ground surface. As previously discussed, for the Approved TOP, the San Bernardino County Museum, Division of Geological Sciences, conducted the paleontological records search and found one previously known paleontological resource locality recorded by the Regional Paleontologic Locality Inventory, a computer database with positional and contextual data for more than 3,000 fossil localities throughout California and the southwestern United States. This review found one paleontological locality for the City area (SBCM 5.1.8). This locality yielded the remains of a mammoth from approximately 20 feet below the ground surface. As a result, the possibility of finding additional paleontological resources within City boundaries is moderate to high at depths of 10 feet or more below ground surface. (PlaceWorks 2022a)

To mitigate the potential impacts identified in Impact 5.7-6, the FSEIR proposes the following mitigation measures. These measures are also stated in the Mitigation Monitoring and Reporting Program of TOP 2050 (PlaceWorks 2022b):

> Mitigation Measure MM 5-2: In areas of documented or inferred archaeological and/or paleontological resource presence, City staff shall require applicants for development permits to provide studies to document the presence/absence of such resources. On properties where resources are identified, such studies shall provide a detailed mitigation plan, including a monitoring program and recovery and/or in situ preservation plan, based on the recommendations of a qualified cultural preservation expert. The mitigation plan shall include the following requirements:
>
> a) Archaeologists and/or paleontologist shall be retained for the project and will be on call during grading and other significant ground-disturbing activities.
>
> b) Should any cultural resources be discovered, no further grading shall occur in the area of the discovery until the Planning Director or designee is satisfied that adequate provisions are in place to protect these resources.
>
> c) Unanticipated discoveries shall be evaluated for significance by a San Bernardino County Certified Professional Archaeologist/Paleontologist. If significance criteria are met, then the project shall be required to perform data recovery, professional identification, radiocarbon dates, and other special studies; submit materials to a museum for permanent curation; and provide a comprehensive final report including a catalog with museum numbers. (PlaceWorks 2022a, 2022b)

III. GEOLOGY

On the geologic map of the l:100,000-scale San Bernardino-Santa Ana 30' x 60' quadrangles (Figure 3, after Morton and Miller 2006), the project is located on the distal margins of the broad alluvial floodplain of the ancestral Santa Ana River. The project is mapped as middle Holocene-aged young sandy alluvial fan deposits (pale gray areas labeled "Qyf_{3a}" on Figure 3). These young deposits overlie middle to late Pleistocene-aged very old sandy alluvial fan deposits, which are mapped at the surface south of the project. At the easternmost end of the proposed off-site alignments on Edison Avenue, surficial sediments are mapped as Holocene and late Pleistocene-aged eolian (wind-blown) deposits (green areas with red dots labeled "Qye" on Figure 3).

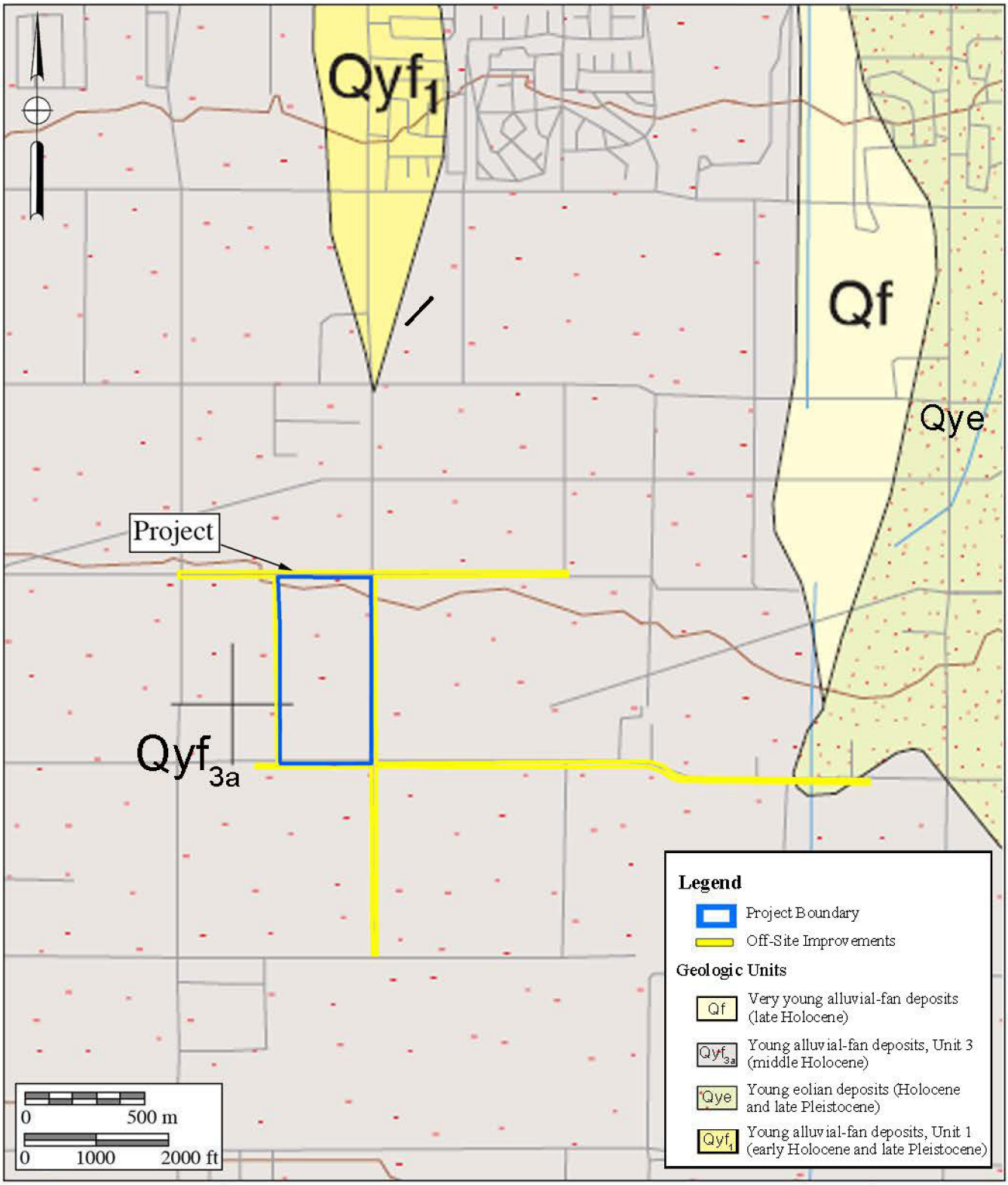

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Figure 3

Geologic Map

The TTM 20670 Project

Geology after Morton and Miller (2006)

IV. PALEONTOLOGICAL RESOURCES

Definition

Paleontological resources are the remains of prehistoric life that have been preserved in geologic strata. These remains are called fossils and include bones, shells, teeth, and plant remains (including their impressions, casts, and molds) in the sedimentary matrix, as well as trace fossils such as footprints and burrows. Fossils are considered older than 5,000 years of age (Society of Vertebrate Paleontology 2010) but may include younger remains (subfossils) 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 (see Section II).

Fossil Locality Records Search

A paleontological literature review and collections and locality records search was conducted for the project using records obtained for prior projects from the Division of Geological Sciences at the San Bernardino County Museum (SBCM) and the Western Science Center (WSC) in Hemet, and data from published and unpublished paleontological literature.

The nearest known fossil localities are situated just south of the project, north of the Chino Airport, as a result of continuing paleontological monitoring for several projects by BFSA Environmental Services, a Perennial Company (BFSA) in this area of Ontario. At the currently ongoing Ontario Ranch Business Center Project, late Pleistocene-aged mammal bones have been collected from six localities, ranging from nine to 19 feet deep. These localities were found approximately a mile and a half southwest of the current project and have yet to be prepared and curated at a museum. BFSA discovered a large, fragmentary limb bone from an herbivore, as well as freshwater clams and snails from the mile-wide Merrill Commerce Center Project, a half-mile south of the TTM 20670 Project. The bone was recovered from approximately 12 feet deep, while the mollusks were found from approximately 18 to 25 feet deep. More freshwater mollusks were discovered along Kimball Avenue in Chino, two miles south of the current project, from approximately 10 feet deep at the Altitude Business Centre Project. At the Ontario 432 Project, approximately one-and-a-half miles to the southeast of the TTM 20670 Project, the sacrum from a large artiodactyl and other unidentified mammalian remains were discovered, at depths ranging from five to seven feet. These specimens have been deposited at the WSC (Wirths 2021). All of these fossil localities are Pleistocene in age. Lastly, it should be noted that all of these discoveries post-date the research materials used for paleontological resources in the FSEIR (PlaceWorks 2022a) and, therefore, the document can be construed as out-of-date in that regard.

The closest fossil localities to the TTM 20670 Project held by the SBCM are situated between one and two miles east of the project, consisting of likely Pleistocene-aged bones from a mastodon and a camel (SBCM localities [locs.] 5.1.23 – 5.1.27). Mammoth remains were found farther to the east, probably along Champagne Avenue (SBCM loc. 5.1.8; PlaceWorks 2022a; Jefferson 2009). Kottkamp (2022) describes this locality as six feet deep, but the City's FSEIR lists the locality as 20 feet deep (PlaceWorks 2022a). In addition, Kottkamp (2022) indicated that the deposits mapped at the surface of this area are unlikely to yield fossils, but the underlying, older deposits "have been found to be highly fossiliferous in the local area."

Project Survey

On April 8, 2024, BFSA staff, under the supervision of Principal Investigator Todd A. Wirths, conducted an intuitive review of the property to determine if any paleontological resources were visible. The field methodology employed for the project included walking evenly spaced survey transects set approximately 10 meters apart while visually inspecting the ground surface, when possible. All potentially sensitive areas where paleontological resources might be located were closely inspected. Visibility of the natural ground surface was limited by vegetation and development, consisting of structures, hardscaping, tractor-trailers and other parked vehicles, existing paved roadways, and gravel spread across the tractor-trailer yard. In addition, a large stockpile of soil was observed within the southeastern corner of the property. Vegetation found within the property consisted of residential and commercial landscaping along with non-native weeds and grasses. No bedrock outcrops were exposed that might indicate the presence of fossils. No paleontological resources, or evidence of paleontological resources, were observed during the survey.

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

Professional Standards

The Society of Vertebrate Paleontology (2010) has drafted guidelines that include four categories of paleontological sensitivity for geologic units (formations) that might be impacted by a proposed project, and are summarized 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 further study is needed to determine the potential of the rock unit.
- *Low Potential:* Rock units that are poorly represented by fossil specimens in institutional collections or, based on a general scientific consensus, that only preserve fossils in rare circumstances.
- *No Potential:* Rock units that have no potential to contain significant paleontological resources, such as high-grade metamorphic rocks and plutonic igneous rocks.

Using these criteria, based on nearby fossil localities in southern and eastern Ontario and southwestern Fontana and the mapped geology, the young alluvial fan/eolian deposits at the project may be considered to have a low potential for paleontological resources, but increase to an undetermined to high potential for yielding significant paleontological resources with increasing depth and age.

City of Ontario Assessment of Paleontological Sensitivity

The City of Ontario considers strata at depths of 10 feet or greater as having a moderate to high paleontological sensitivity. As such, the potential to uncover undiscovered paleontological resources is considered high (PlaceWorks 2022a: 5.7-17).

VI. CONCLUSIONS AND RECOMMENDATIONS

Potentially fossiliferous late Pleistocene alluvial fan deposits likely occur at depth below the project. These deposits underlie the Holocene young alluvial fan and eolian deposits mapped at the surface ("Qyf_{3a}" and "Qye" on Figure 3). The occurrence of terrestrial vertebrate fossils at shallow depths from Pleistocene alluvial fan sediments across the Inland Empire is well documented. The high paleontological sensitivity rating typically assigned to Pleistocene alluvial fan sediments for yielding paleontological resources supports the recommendation that paleontological monitoring be implemented during mass grading and excavation activities in undisturbed Pleistocene alluvial fan sediments to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources.

On the basis of these statements, a Paleontological Resources Impact Mitigation Program (PRIMP) is recommended, in accordance with Mitigation Measure MM 5-2 of the City of Ontario (PlaceWorks 2022b). The PRIMP shall be approved by the Planning Department of the City of Ontario prior to the issuance of the project's grading permit. Based on these findings, *full-time monitoring starting at a depth of five feet below the surface* during earth disturbance activities is strongly recommended. A proposed paleontological monitoring plan is detailed below. When implemented with the provisions of CEQA, the City of Ontario (PlaceWorks 2022a, 2022b), and the guidelines of the Society of Vertebrate Paleontology (2010), this paleontological monitoring plan would mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources (fossils), if present, to a level below significant.

Paleontological Monitoring Plan

1. All mitigation programs shall be performed by a qualified professional (project) paleontologist, defined as an individual with an M.S. or Ph.D. in paleontology or geology who has proven experience 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.
2. Monitoring of mass grading and excavation activities shall be performed by a qualified paleontologist or paleontological monitor. Starting at a depth of five feet, monitoring will be conducted full-time in areas of grading or excavation in undisturbed sediments. Monitoring of artificial fill is not recommended.
3. If a fossil(s) is found at a shallower depth, earth disturbance activities should be halted within a radius of 50 feet from the location of the fossil, and a project-level paleontologist shall be consulted to determine the significance of the fossilized remains. If the fossil is deemed significant by the project-level paleontologist, full-time monitoring should be initiated at the project.
4. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays. The monitor must be empowered to temporarily halt or divert equipment to allow 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 low potential to contain fossil resources. The monitor shall notify the project paleontologist, who will then notify the concerned parties of the discovery.

5. Paleontological salvage during trenching and boring activities is typically from the generated spoils and does not delay the trenching or drilling activities. Fossils will be collected and placed in cardboard flats or plastic buckets and identified by field number, collector, and date collected. Notes will be taken on the map location and stratigraphy of the site, which will be photographed before it is vacated and the fossils are removed to a safe place. On mass grading projects, discovered fossil sites will be protected by flagging to prevent them from being overrun by earthmovers (scrapers) before salvage begins. Fossils will be collected in a similar manner, with notes and photographs being taken before removing the fossils. The precise location of the site is determined with the use of electronic handheld devices. If the site involves remains from 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, a fossil recovery crew shall excavate around the find, encase the find within a plaster and burlap jacket, and remove it after the plaster is set. For large fossils, use of the contractor's construction equipment may be solicited to help move the jacket to a safe location.
6. Isolated fossils will be collected by hand, wrapped in protective materials, and placed in temporary collecting flats or five-gallon buckets. Notes will be taken on the map location and stratigraphy of the site, which will be photographed before it is vacated and the fossils are moved to a safe place.
7. 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.
8. In accordance with the "Microfossil Salvage" section of the SVP guidelines (2010:7), bulk sampling and screening of fine-grained sedimentary deposits (including carbonate-rich paleosols) must be performed if the deposits are identified to possess indications of producing fossil "microvertebrates" to test the feasibility of the deposit to yield fossil bones and teeth. If indicators of potential microvertebrate fossils are found, screening of a test sample (approximately 600 pounds) is recommended, according to the SVP guidelines. If feasible, wet screening shall be conducted on the project site. If screening yields significant fossils, then removing and processing a "standard sample" of 6,000 pounds shall be performed.
9. In the laboratory, individual fossils will be cleaned of extraneous matrix, any breaks will be repaired, and the specimen, if needed, will be stabilized by soaking in an archivally approved acrylic hardener (*e.g.,* a solution of acetone and Paraloid B-72).

10. Recovered specimens will be prepared to a point of identification and permanent preservation (not display), including screen-washing sediments to recover small invertebrates and vertebrates. Preparation of individual vertebrate fossils is often more time-consuming than for accumulations of invertebrate fossils.
11. Recovered specimens will be identified and curated into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage (*e.g.*, the San Bernardino County Museum). The paleontological program should include a written repository agreement prior to the initiation of mitigation activities. Prior to curation, the lead agency (the City of Ontario) will be consulted on the repository/museum to receive the fossil material.
12. A final report of findings and significance will be prepared, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location(s). The report, when submitted to and accepted by the appropriate lead agency, will signify satisfactory completion of the project program to mitigate impacts to any potential nonrenewable paleontological resources (*i.e.*, fossils) that might have been lost or otherwise adversely affected without such a program in place.

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.

April 15, 2024

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

Date

VIII. REFERENCES

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APPENDIX A

Qualifications of Key Personnel

Todd A. Wirths, MS, PG No. 7588

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BFSA Environmental Services
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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.