

PALEONTOLOGICAL ASSESSMENT FOR THE WATER AND HARVILL PROJECT

RIVERSIDE COUNTY, CALIFORNIA

APNs 317-270-006, 317-270-010, 317-270-015, and 317-270-016

Prepared for:

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Submitted to:

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Prepared by:

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September 9, 2021

Paleontological Database Information

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Report Date: September 9, 2021

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USGS Quadrangle: Section 13, Township 4 South, Range 4 West, San Bernardino
Baseline and Meridian, *Perris, California* (7.5-minute)
topographic quadrangle

Assessor's Parcel Numbers: 317-270-006, 317-270-010, 317-270-015, and 317-270-016

Study Area: 20.57 acres

Key Words: "High B" paleontological resource sensitivity; Riverside County;
Pleistocene very old alluvial fan deposits; full time monitoring
below four feet.

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I. INTRODUCTION AND LOCATION

This paleontological assessment report has been completed for the Water and Harvill Project, situated west of the I-215 freeway between Water Street and Orange Avenue along the west side of Harvill Avenue in unincorporated Riverside County, California (Figures 1 and 2). The project is located within Section 13, Township 4 South, Range 4 West, of the San Bernardino Baseline and Meridian, on the USGS 7.5-minute *Perris, California* topographic quadrangle map (Figure 2). The project is composed of four parcels totaling 20.57 acres (Assessor's Parcel Numbers 317-270-006, 317-270-010, 317-270-015, and 317-270-016). As proposed, the project would develop a 449,000 square-foot warehouse/logistics building on the subject property, with interior office space, truck/trailer parking, associated infrastructure, and a storm water detention basin.

As the lead agency, the County of Riverside 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. A paleontological field survey was not conducted since the surface of the project property is flat-lying and disturbed.

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.

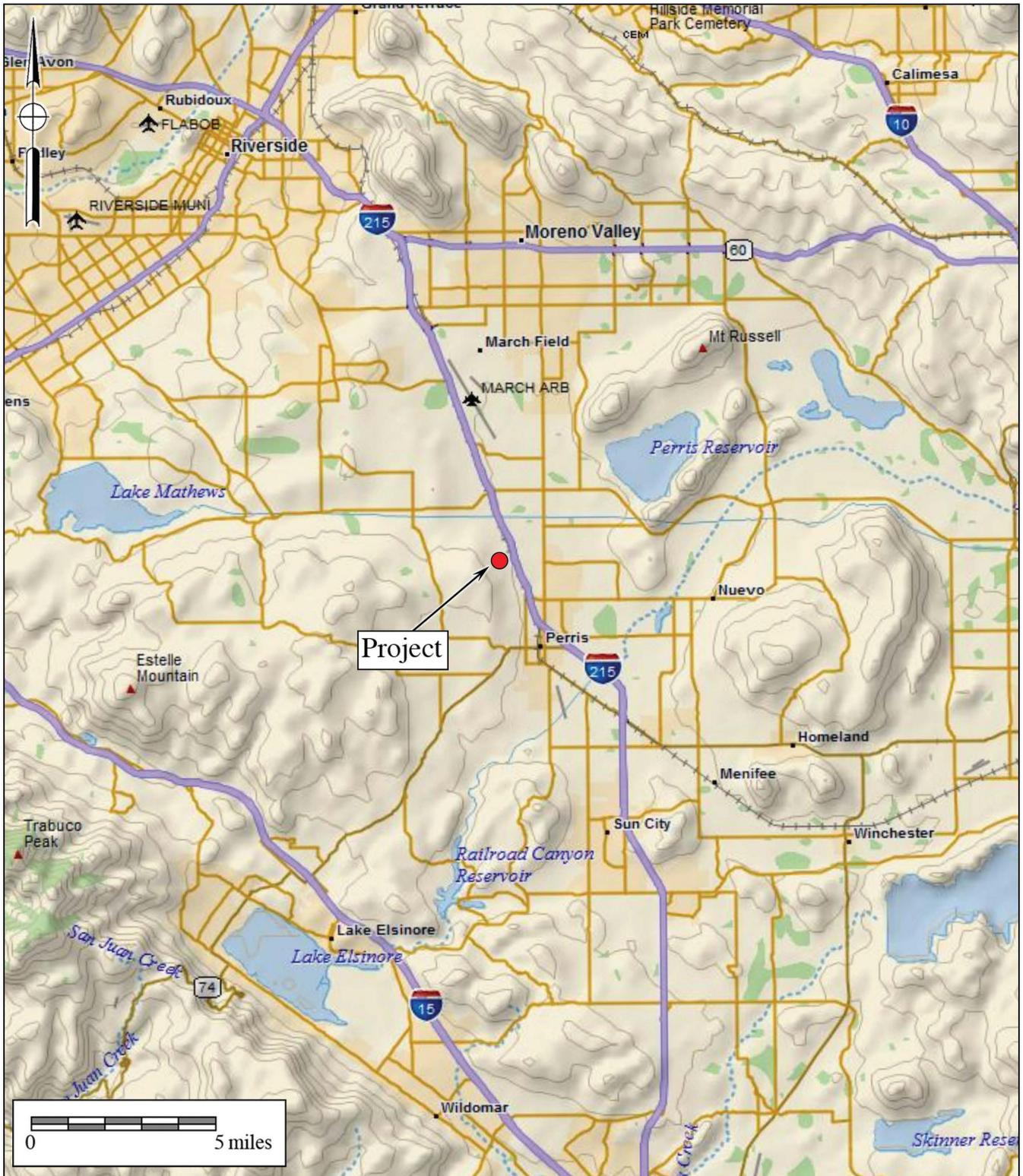
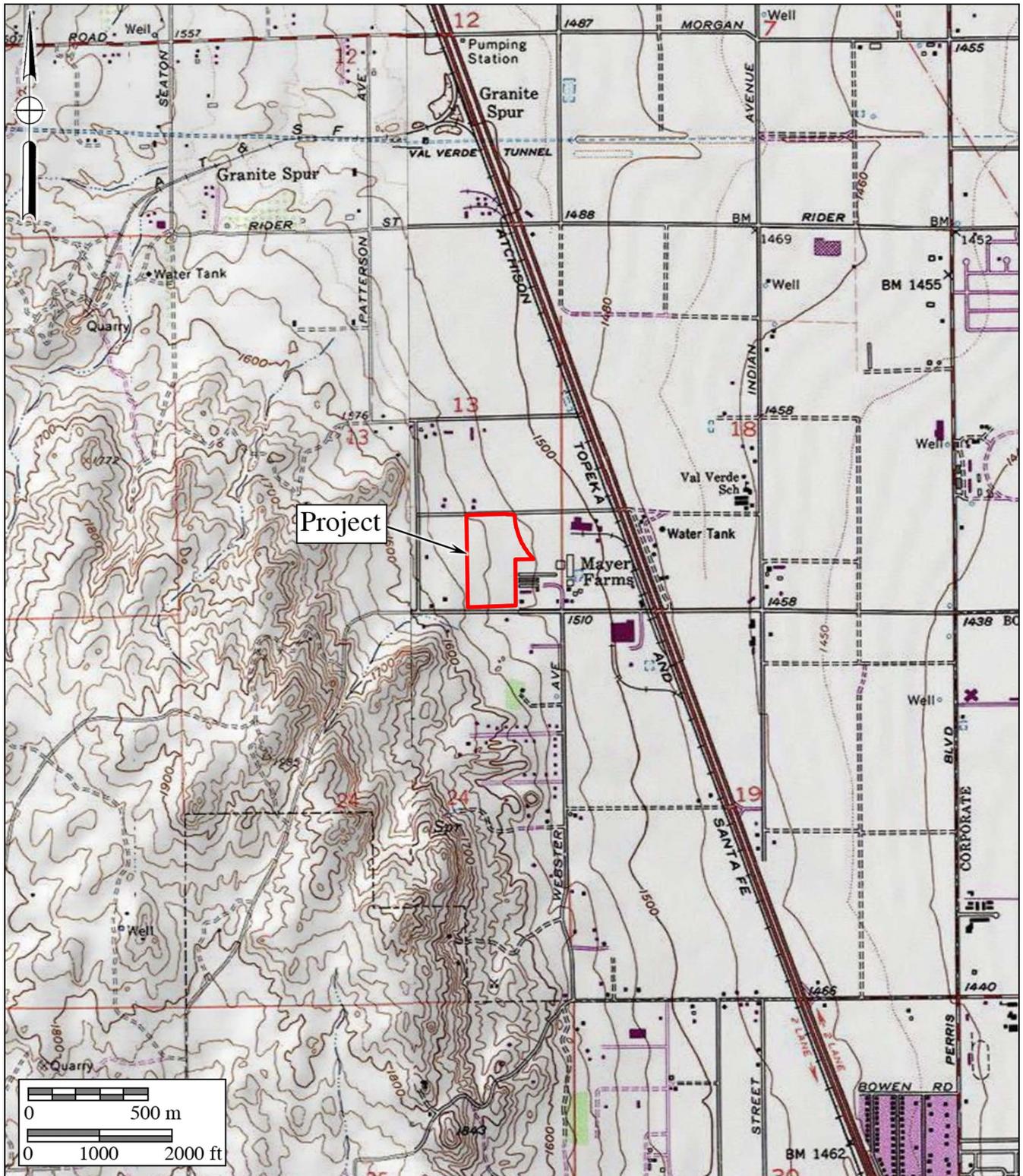


Figure 1
General Location Map
 The Water and Harvill Project

DeLorme (1:250,000)





Project

Figure 2

Project Location Map

The Water and Harvill Project

USGS *Perris* and *Steele Peak* Quadrangles (7.5-minute series)



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 by which 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.

County of Riverside Guidelines

For Riverside County, policies concerning paleontological resources are addressed under the 2015 Multipurpose Open Space Element of the Riverside County General Plan, and are as follows:

- OS 19.6 Whenever existing information indicates that a site proposed for development has high paleontological sensitivity as shown on Figure OS-8, a paleontological resource impact mitigation program (PRIMP) shall be filed with the County Geologist prior to site grading. The PRIMP shall specify the steps to be taken to mitigate impacts to paleontological resources.
- OS 19.7 Whenever existing information indicates that a site proposed for development has low paleontological sensitivity as shown on Figure OS-8, no direct mitigation is required unless a fossil is encountered during site development. Should a fossil be encountered, the County Geologist shall be notified and a paleontologist shall be retained by the project proponent. The paleontologist shall document the extent and potential significance of the paleontological resources on the site and establish appropriate mitigation measures for further site development.

OS 19.8 Whenever existing information indicates that a site proposed for development has undetermined paleontological sensitivity as shown on Figure OS-8, a report shall be filed with the County Geologist documenting the extent and potential significance of the paleontological resources on site and identifying mitigation measures for the fossil and for impacts to significant paleontological resources prior to approval of that department.

OS 19.9 Whenever paleontological resources are found, the County Geologist shall direct them to a facility within Riverside County for their curation, including the Western Science Center in the City of Hemet. (County of Riverside 2015a)

A comprehensive review of paleontological resources, including regulatory background, permitting conditions, significance thresholds, and procedures for the treatment of discovered resources, can be found in the County's draft environmental impact report (County of Riverside 2015b).

III. GEOLOGY

Geomorphically, the project is mostly flat with a gentle eastward gradient, situated along the western edge of the Perris Valley, on the eastern slopes of the northern part of the Peninsular Ranges. The geology of the project and immediate vicinity is shown on Figure 3 (after Morton 2001, 2003). The maps of the area show that the project is within the central part of the Perris tectonic block and is underlain by lower Pleistocene (approximately 1.8 million- to perhaps 200,000- to 300,000-year-old) sandy, very old alluvial fan deposits (brown areas labeled "Qvof_a" on Figure 3). According to Woodford et al. (1971), the thickness of the alluvial deposits overlying the granitic bedrock basement beneath the project may be as much as 80 feet at the project's eastern boundary. The granitic basement occurs as extensive outcrops west of the project (light gray areas labeled "Kvt," on Figure 3).

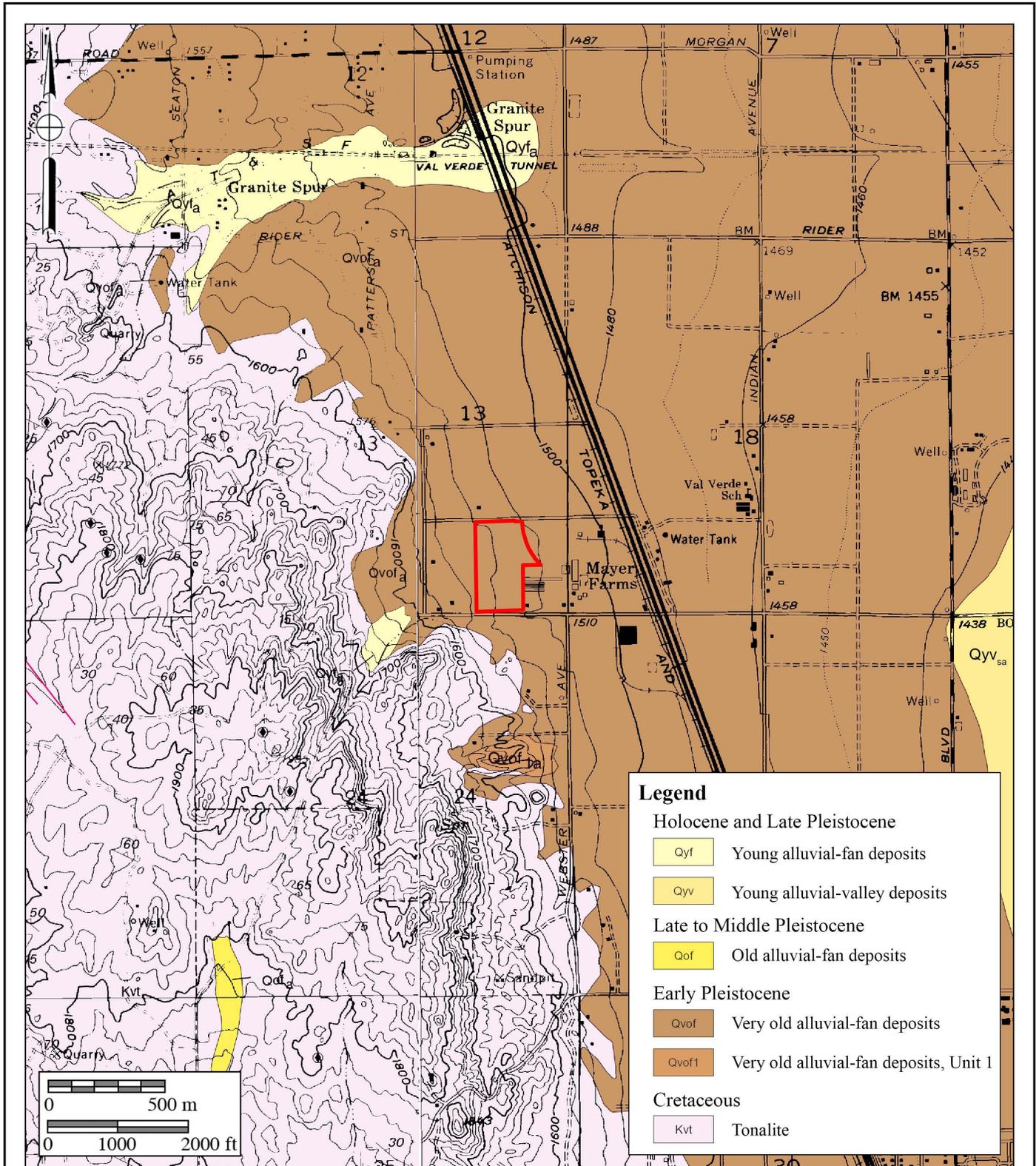


Figure 3
Geologic Map

The Water and Harvill Project
Geology after Morton (2001 and 2003)



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 non-renewable resource under state and local guidelines (Section II of this report).

Fossil Locality Search

A paleontological literature review and collections and locality records search was conducted for the project using records obtained from prior projects at Brian F. Smith and Associates from the Division of Geological Sciences at the San Bernardino County Museum (SBCM), the Los Angeles County Museum of Natural History (LACM), the Western Science Center (WSC) in Hemet, and data from published and unpublished paleontological literature (Jefferson 1991, 2009). The resulting locality records search did not identify any previously recorded fossil localities from within the boundaries of the project. The closest recorded fossil localities may be those recorded by the SBCM (SBCM localities 5.3.151 and 5.3.153) from Pleistocene old alluvium near the Lakeview Hot Springs area on the southeast side of the Perris Reservoir. Fossil vertebrates collected from these localities include mammoths, extinct horses, and extinct bison (Jefferson 2009). From WSC records, the closest fossil localities are likely the many located along Olive Avenue in the Winchester area, several miles southeast of the Water and Harvill Project. These localities are from Pleistocene deposits that yielded the remains of many species of large and small mammals. The nearest known LACM fossil locality (LACM locality 5168) in Pleistocene sediments is located several miles to the south of the project in the vicinity of Canyon Lake and Menifee, yielding a camel specimen.

V. PALEONTOLOGICAL SENSITIVITY

Professional Standards

The Society of Vertebrate Paleontology 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 Pleistocene age of the sediments mapped at the project and nearby fossil localities found in similar deposits as the those at the project, the very old alluvial fan deposits can be considered to have an undetermined to high potential to yield significant paleontological resources.

Riverside County Sensitivity

A paleontological sensitivity map generated by the County of Riverside Land Information System ranks the lower Pleistocene-aged very old alluvial fan deposits underlying the subject property as having a “High B” paleontological sensitivity (shown in yellow tint on Figure 4). Riverside County defines geologic formations with a “High B” potential to yield paleontological resources as:

[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 Land Information System 2021)

Conversely, the western portion of the project is ranked as having a “Low” paleontological sensitivity by the County of Riverside Land Information System (light green areas on Figure 4). A “Low” ranking is defined as:

Following a literature search, records check and a field survey, areas may be determined by a qualified vertebrate paleontologist as having low potential for containing significant paleontological resources subject to adverse impacts. (County of Riverside Land Information System 2021)

The category “High B” indicates that fossils are likely to be encountered four feet below the surface and may be impacted during excavation by construction activities, whereas assignment of a “Low” sensitivity reflects rocks that generally do not contain fossils, such as Holocene sedimentary deposits and igneous rocks.

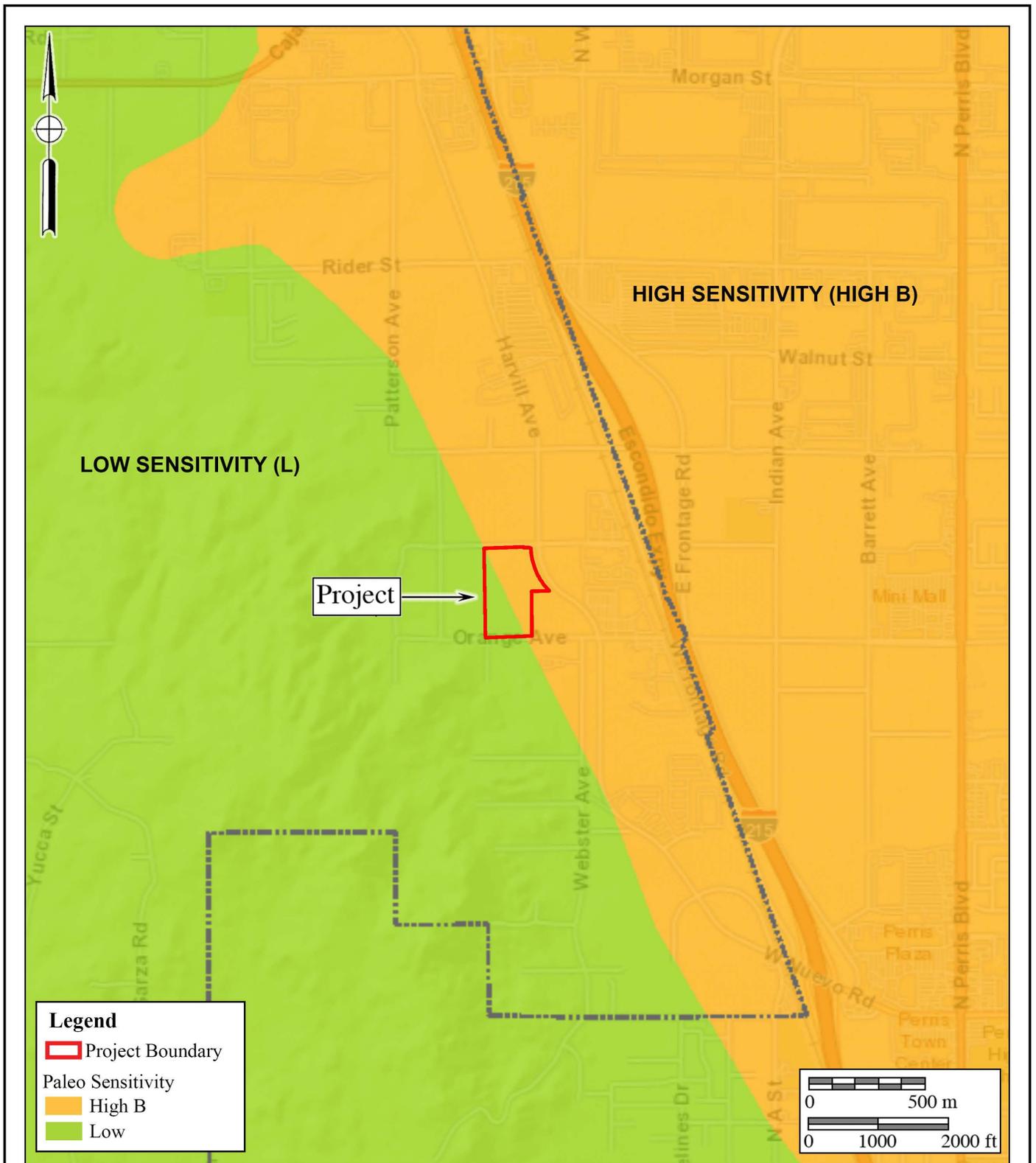


Figure 4
Riverside County Paleontological Sensitivity Map

The Water and Harvill Project

After Riverside County Land Information System (2021)



Since a “Low” assignment has been applied to a wide spectrum of rock units, the County of Riverside Land Information System has suggested that a qualified professional conduct an inspection of the site for its suitability to yield fossils. It should be noted that the division between the “High B” and “Low” paleontological sensitivities within the project boundaries is not accurate in Figure 4; the geologic contact between the high-sensitivity very old alluvial fan deposits (“Qvof_a”) and the low-sensitivity granite (“Kvt”) just west of the project, as shown in Figure 3, more accurately reflects these ratings.

Typically, sediments mapped as Pleistocene older alluvial fan sediments in western Riverside County are assigned a high (“High A” or “High B”) paleontological sensitivity, based on the well documented record of yielding important Pleistocene-age fossils, such as bison, mammoth, mastodon, horse, camel, giant ground sloth, short-faced bear, saber-toothed cat, and others (Jefferson 1991). The WSC in Hemet regards Pleistocene very old alluvial fan sediments, such as those that underlie the project, as having a high potential to contain significant paleontological resources, and therefore, typically recommend that a monitoring program be implemented to mitigate impacts to potential nonrenewable paleontological resources.

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). Although the paleontological locality search did not indicate the presence of any known fossil localities within the project, the occurrence of terrestrial vertebrate fossils at shallow depths from Pleistocene older alluvial fan sediments across the Inland Empire of western Riverside County is well documented. These Pleistocene older alluvial fan sediments are typically assigned a “High” paleontological sensitivity rating for yielding paleontological resources. Full-time monitoring of undisturbed Pleistocene very old alluvial fan deposits at the project is recommended starting at four feet below the surface (County of Riverside 2015b).

Monitoring during ground-disturbing activities, such as grading or trenching, by a qualified paleontologist is recommended to ensure that if paleontological resources (*i.e.*, fossils) are present, they will be handled in a timely and proper manner. A Mitigation Monitoring and Reporting Program (MMRP) with mitigation measures addressing paleontological resources is recommended. This MMRP will ensure that any paleontological resources discovered during the construction grading are treated in accordance with county guidelines and CEQA requirements. A scope of the monitoring program is provided below.

Mitigation Monitoring and Reporting Program

The following MMRP guidelines are based on the findings stated above. The specific guidelines are consistent with the provisions of CEQA, the County of Riverside, and the guidelines of the Society of Vertebrate Paleontology (2010) for any mass grading and

excavation-related activities, including utility trenching, during construction within the project. Paleontological monitoring may be reduced upon the observations and recommendations of the professional-level project paleontologist. The following MMRP follows the procedures outlined by the County of Riverside (2015b), and when implemented will reduce potential impacts of paleontological resources to a level below significant:

1. Description of the proposed site and planned grading operations: See Section I of this report.
2. Description of the level of monitoring required for all earthmoving activities in the project area: All mass grading, excavation, drilling, and trenching activities within undisturbed Pleistocene very old alluvial fan deposits (Qvof_a), which underlie the project, starting at a depth of four feet below the surface, are to be monitored full-time for paleontological resources. Prior to initiation of any grading, drilling, and/or excavation activities, a preconstruction meeting will be held and attended by the paleontologist of record, representatives of the grading contractor and subcontractors, the project owner or developer, and a representative of the lead agency. The nature of potential paleontological resources shall be discussed, as well as the protocol that is to be implemented following discovery of any fossiliferous materials. Monitoring of any potential artificial fill or disturbed soils is not required.
3. Identifications and qualifications of the qualified paleontological monitor to be employed for grading operations monitoring: A Riverside County-approved paleontologist, or personnel managed at the direction of a Riverside County-approved paleontologist, shall monitor earth disturbance activities for potential paleontological resources.
4. Identification of personnel with authority and responsibility to temporarily halt or divert grading equipment to allow for the recovery of large specimens: In the field, the paleontological monitors have the authority and responsibility to halt or divert grading operations.
5. Direction for any fossil discoveries to be immediately reported to the property owner, who in turn, will immediately notify the County of Riverside of the discovery: The paleontological principal investigator shall notify the County of Riverside of any fossil discoveries by email and/or phone call.
6. Means and methods to be employed by the paleontological monitor to quickly salvage fossils as they are unearthed to avoid construction delays: Paleontological salvage during trenching activities is typically from the trench spoils and does not delay the trenching activity. Fossils encountered during earth-disturbing activities will be collected and placed in cardboard flats or plastic buckets and identified by field number, collector, and date collected. On mass grading projects, any discovered fossil site is protected by flagging to prevent it from being overrun by earthmovers

- (scrapers) before salvage begins. All grading activities within 50 feet of the discovery site should be suspended until fossil recovery has been completed. Fossils are collected in a similar manner, with notes and photographs being taken before removing fossils. If the site involves a large terrestrial vertebrate, for example, large bone(s) or a mammoth tusk, that is/are too large to be easily removed by a single monitor, a field crew will be sent to the site to excavate around the find, encase the discovery within a plaster jacket, and remove it after the plaster has set. For large fossils, use of the contractor's construction equipment is solicited to remove the jacket to a safe location. It sometimes happens that fossils are found by construction workers when a paleontological monitor is not on-site or is occupied elsewhere on a grading project. In such cases, all work should be halted within 50 feet of the discovery location until it can be properly evaluated by the paleontological monitor or professional paleontologist.
7. Sampling of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates: Sediments containing small invertebrate and/or vertebrate fossils are considered just as important as larger fossils and will always be collected (see below). When vertebrate fossil remains are recovered, additional sediment samples will be taken from the same location to process for micro-vertebrate specimens.
 8. Procedures and protocol for collecting and processing samples and specimens: Isolated fossils will be collected by hand, wrapped in paper, and placed in temporary collecting flats or five-gallon buckets. Notes will be taken on the map location and stratigraphy of the site, and the site will be photographed before it is vacated and the fossils are removed to a safe place. Particularly small invertebrate fossils typically represent multiple specimens of a limited number of organisms, and a scientifically suitable sample can be obtained by 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 micro-vertebrate fossils, the standard test is usually the observed presence of small pieces of bone within the sediments. If bone is 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. If, after five buckets have been wet-screened and have failed to yield any micro-vertebrate or other fossil material under microscopic examination, then this process can be terminated. In the laboratory, any recovered fossils are cleaned of extraneous matrix, any breaks are repaired, and the specimen, if necessary, is stabilized by soaking in an archivally approved acrylic hardener (e.g., a solution of acetone and Paraloid B-72).
 9. Fossil identification and curation procedures to be employed: Fossils will be identified by an adjunct invertebrate or vertebrate paleontology specialist, depending

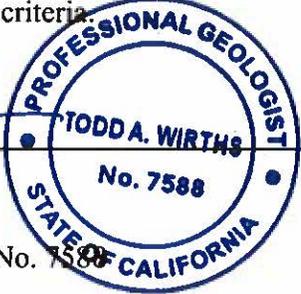
- on the group of fossils needing identification (e.g., mollusks, reptiles, birds, mammals, or fish). Standard museum curation steps will be utilized by, or under the direct supervision of, the principal investigator, who has nine years of paleontological curatorial experience. Curation steps include cleaning, preparing, sorting, identifying, painting, numbering, and labeling all specimens before submittal to the receiving institution.
10. Identification of the permanent repository to receive any recovered fossil material: Pursuant to the County of Riverside’s “SABER” Policy, paleontological materials (fossils) found in Riverside County should, by preference, be directed to the WSC in Hemet, California. A written agreement between the project developer and the preferred archival institution should be in hand before grading begins. The project owner/developer will assume financial responsibility for any institutional curation fees for the project.
 11. All pertinent exhibits, maps, and references: See text and appendices of this PRIMP.
 12. Procedures for reporting findings: A final written report will be produced by the project paleontologist, and submitted to the County of Riverside geologist at the conclusion of grading activities for the project. The report will include sections on general background information, previous studies (both geologic and paleontologic), results of findings and analysis, discussion of all recovered fossils, a fossil list identified to the lowest taxonomic level possible, a list of references cited, index and locality maps, and graphics to show the locations of all fossil localities. A letter documenting the receipt and acceptance of the fossil collections by the receiving institution must be included in the final report, a copy of which is to be archived with the fossil collection. If fossils are not recovered during the project, the final report will be in a shortened letter format.
 13. Identification and acknowledgement of the developer for the content of the PRIMP, as well as acceptance of financial responsibility for monitoring, reporting, and curation fees: The developer or owner will assume financial responsibility for the PRIMP and any associated curation fees for the project.
 14. All reports shall be signed by the project paleontologist: The project paleontologist and a California Professional Geologist will be the author(s) signing all paleontological reports related to the project.

VII. CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this paleontological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief, and have been compiled in accordance with CEQA criteria.



Todd A. Wirths
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California Professional Geologist No. 7588


September 9, 2021

Date

VIII. REFERENCES CITED

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[Ethics/SVP_Impact_Mitigation_Guidelines.aspx](#).

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APPENDIX A

Qualifications of Key Personnel

Todd A. Wirths, MS, PG No. 7588

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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.