PALEONTOLOGICAL RESOURCE IMPACT MITIGATION PROGRAM FOR THE KELLER CROSSING PROJECT

SP 380; TTM 38163; GPA 951; BGR2200022 RIVERSIDE COUNTY, CALIFORNIA

APNs 472-110-001, -002, -003, -004, -007, -008, -009, -032, -033, and -034

Project Site Location: Section 21, Township 6 South, Range 2 West of the *Winchester, California* USGS Quadrangle

Prepared on Behalf of:

D.R. Horton
2280 Wardlow Circle, Suite 100
Corona, California 92878
(951) 272-9000

Prepared for:

Riverside County Planning Department
4080 Lemon Street, 12th Floor
Riverside, California 92501
(951) 955-3200

Prepared by:

Brian F. Smith and Associates, Inc.
14010 Poway Road, Suite A
Poway, California 92064
(858) 679-8218

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Paleontological Database Information

Author:	Todd A. Wirths, M.S., Senior Paleontologist, California Professional Geologist No. 7588
Consulting Firm:	Brian F. Smith and Associates, Inc. 14010 Poway Road, Suite A Poway, California 92064 (858) 679-8218
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Report Title:	Paleontological Resource Impact Mitigation Program for the Keller Crossing Project, (SP 380; TTM 38163GPA 951; BGR2200022), Riverside County, California
Prepared on Behalf of:	D.R. Horton 2280 Wardlow Circle, Suite 100 Corona, California 92878 (951) 272-9000
Prepared for:	Riverside County Planning Department 4080 Lemon Street, 12th Floor Riverside, California 92501 (951) 955-3200
Prepared by:	Brian F. Smith and Associates, Inc. 14010 Poway Road, Suite A Poway, California 92064
Assessor's Parcel Numbers:	472-110-001, -002, -003, -004, -007, -008, -009, -032, -033, and -034
USGS Quadrangle:	Section 21, Township 6 South, Range 2 West of the *Winchester, California* USGS Quadrangle
Study Area:	201.1 acres
Key Words:	"High" paleontological resource sensitivity; Riverside County; French Valley; Quaternary very old sandy alluvial channel deposits; full-time monitoring in on-site project areas.

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I. INTRODUCTION AND LOCATION

This Paleontological Resource Impact Mitigation Program (PRIMP) has been completed for the Keller Crossing Project, which is located within the French Valley area of unincorporated Riverside County, California within the Sphere of Influence for the city of Murrieta (Figures 1, 2a, and 2b). The 201.1-acre project covers Assessor's Parcel Numbers (APNs) 472-110-001, -002, -003, -004, -007, -008, -009, -032, -033, and -034 and is situated within Section 21, Township 6 South, Range 2 West of the USGS *Winchester* 7.5-minute Quadrangle (see Figures 2a and 2b).

The proposed project includes a General Plan Amendment (GPA) approval of Specific Plan (SP) 380 and a change of zone. GPA 951 would amend the general plan foundation component for the property from Rural Residential (Rural Foundation Component) to Commercial Retail, Commercial Office, Mixed-Use, Medium Density Residential, Low Density Residential, and Open Space Conservation (Community Development Foundation Component). The specific plan area is divided into eight land use planning areas that range in size from 8.8 to 61.1 acres. Land uses proposed for SP 380 include commercial retail, commercial office, medium density residential, low density residential, mixed-use, open space conservation, and supporting master plan roadways. In addition, off-site improvement locations will be impacted by the current project as a result of right-of-way (ROW) and utility improvements along Keller Road between Leon Road and Washington Street; a portion of Winchester Road (SR 79) between Scott Road and Keller Road; a portion of Pourroy Road between Winchester Road (SR 79) and Via Curtidor; and a small section of Winchester Road (SR 79) at La Alba Drive (see Figures 2a and 2b).

As a condition to be met prior to the issuance of the grading permit for the project, the Riverside County Planning Department has requested the submittal of a PRIMP for review and approval. This PRIMP incorporates an updated assessment of the project's potential to yield paleontological resources and a new paleontological locality records search. The updated paleontological assessment will assist in determining a level of mitigation for potential impacts to paleontological resources appropriate for the project. Implementation of this PRIMP addresses the treatment of scientifically significant fossil remains that might be uncovered by earthmoving activities at previously unknown fossil sites within the project. Without the PRIMP, fossil remains and associated specimen and corresponding geologic data would be lost to excavation activities and unauthorized fossil collecting. The recommendations in this PRIMP are consistent with the intent and provisions of the California Environmental Quality Act (CEQA), environmental guidelines of the County of Riverside, and the procedures outlined by the Society of Vertebrate Paleontology (2010) and should be implemented for any mass grading and excavation-related activities, including utility and storm drain trenching, during construction within the project. This PRIMP will: identify any documented, nearby fossil localities; summarize the geology underlying the site and assess the potential to contain paleontological resources; evaluate the potential of project activities to negatively impact fossil resources that might exist at the project; and provide guidelines for mitigation of potential impacts.

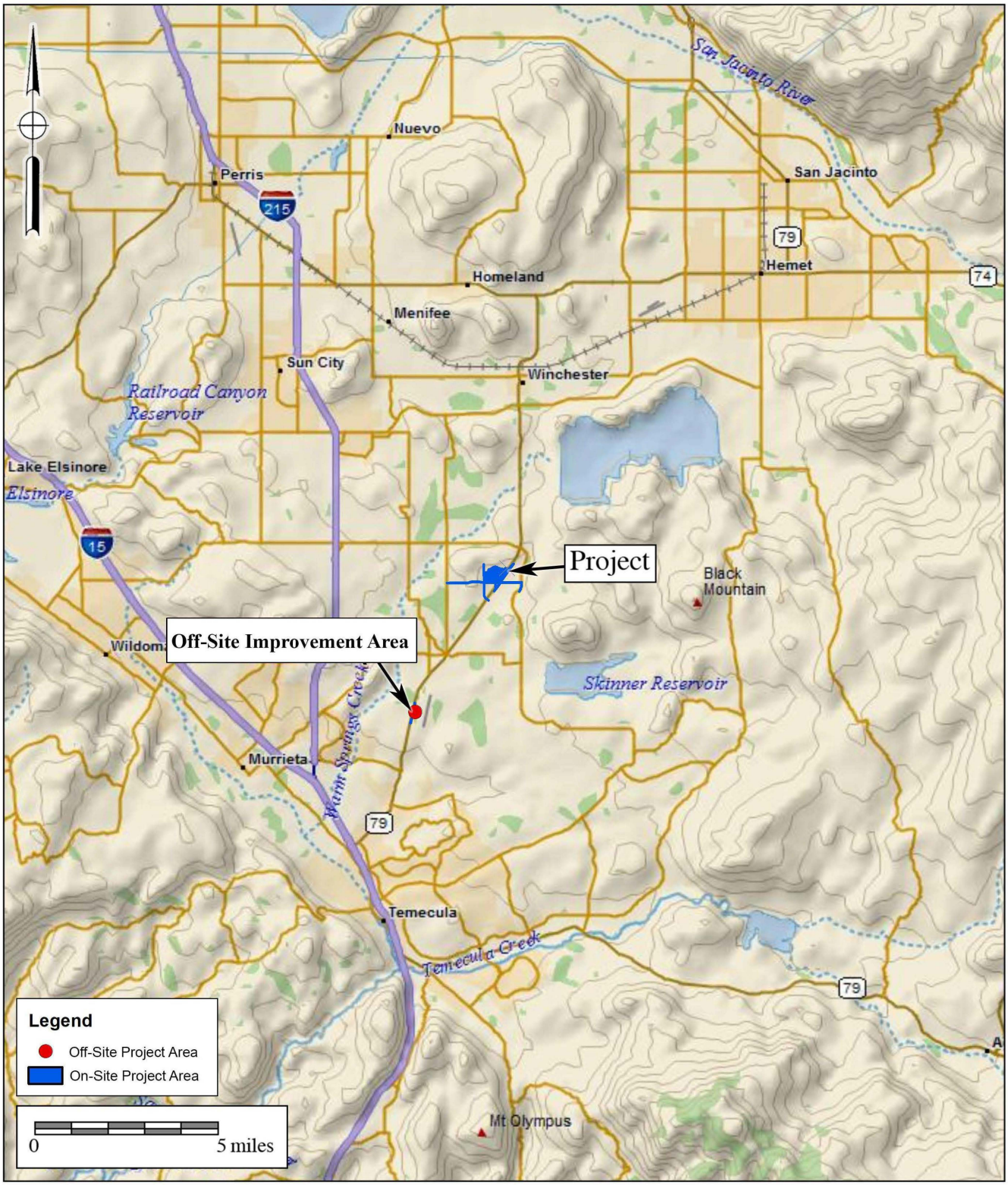


Figure 1

General Location Map

The Keller Crossing Project

DeLorme (1:250,000)

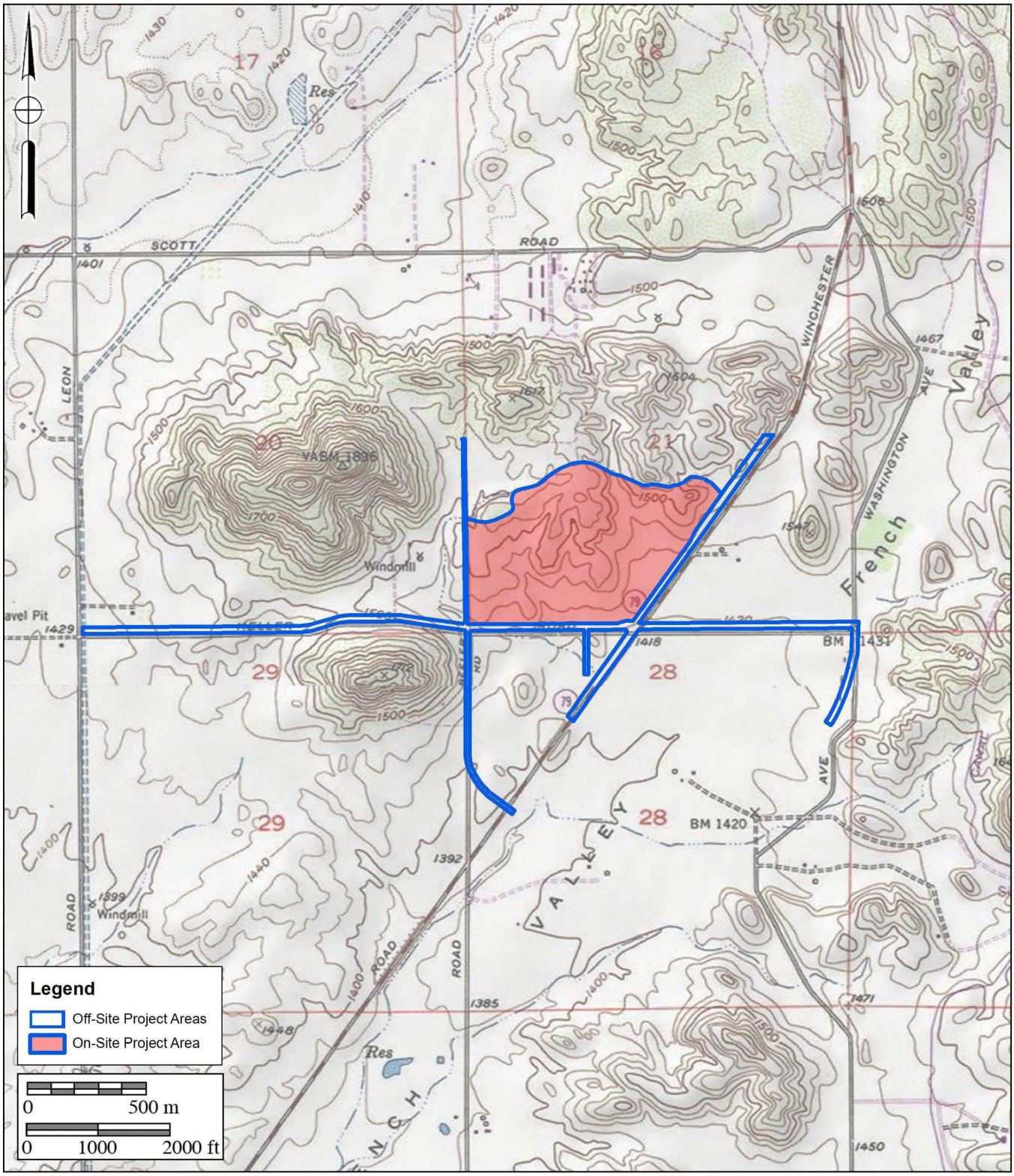


Figure 2a

Project Location Map

The Keller Crossing Project

USGS *Murrieta, Romoland, Bachelor Mountain,* and *Winchester* Quadrangles (7.5-minute series)

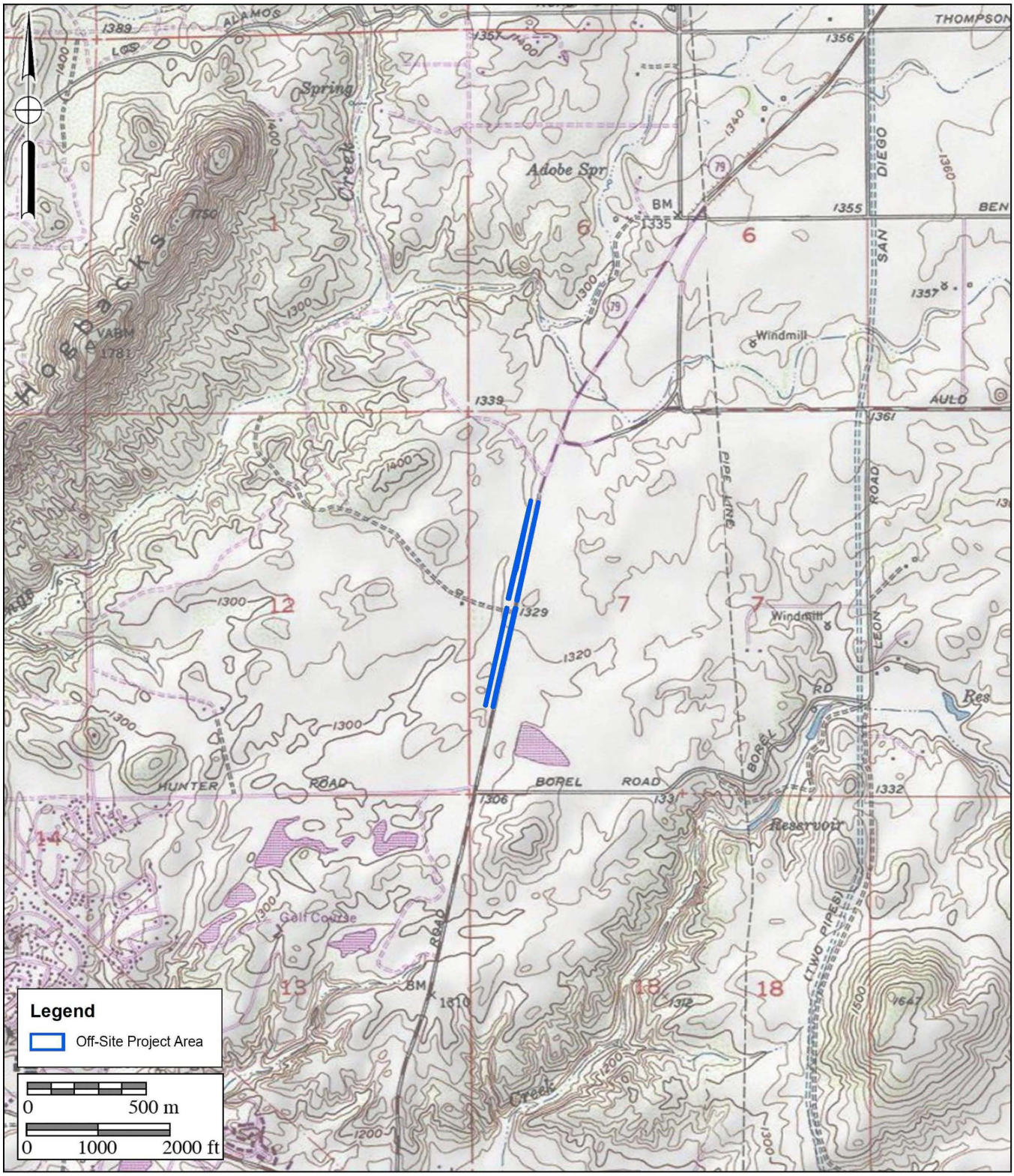


Figure 2b

Project Location Map

The Keller Crossing Project

USGS *Winchester* Quadrangle (7.5-minute series)

II. REGULATORY SETTING

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 "Guidelines for Implementation of the California Environmental Quality Act," as amended in December 2018 (California Code of Regulations [CCR] Title 14, Division 6, Chapter 3, Sections 15000 et seq.), procedures define the types of activities, persons, and public agencies required to comply with CEQA. Section 15063 of the CCR provides a process by which a lead agency may review a project's potential impact to the environment, whether the impacts are significant, and provide recommendations, if necessary.

In CEQA's Environmental Checklist, one of the questions to answer is, "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (Appendix G, Section VII, Part f). This is to ensure compliance with California Public Resources Code Section 5097.5, the law that protects nonrenewable resources, including fossils, which states:

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

For Riverside County, policies concerning paleontological resources are addressed under the 2015 Multipurpose Open Space Element of the Riverside County General Plan, 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 (EIR) (County of Riverside 2015b).

Project-Specific Conditions

A CEQA-compliant EIR was conducted for the Keller Crossing Project by HELIX Environmental Planning (HELIX 2012). In the EIR, various potentially significant environmental impacts that may occur if the project is implemented are analyzed. Mitigation measures are proposed for environmental issues that potentially could be significantly impacted as a result of the project's implementation, and include "unknown buried paleontological resources." When implemented, the proposed mitigation measures would reduce impacts to potential paleontological resources to less than significant. The proposed mitigation measures for paleontological resources are below:

PR-1 The applicant shall retain a qualified paleontologist approved by the County to create and implement a project-specific plan for monitoring site grading/earthmoving activities (project paleontologist).

PR-2 The project paleontologist retained shall review the approved development plan and grading plan and shall conduct any pre-construction work necessary to render appropriate monitoring and mitigation requirements as appropriate. These requirements shall be documented by the project paleontologist in a [PRIMP]. This PRIMP shall be submitted to the County Geologist for review and approval prior to issuance of a Grading Permit. Information to be contained in the PRIMP, at a minimum and in addition to other industry standard and Society of Vertebrate Paleontology standards, are as follows:

1. Description of the proposed site and planned grading operations.
2. Description of the level of monitoring required for all earth-moving activities in the project area.
3. Identification and qualifications of the qualified paleontological monitor to be employed for grading operations monitoring.
4. Identification of personnel with authority and responsibility to temporarily halt or divert grading equipment to allow for recovery of large specimens.
5. Direction for any fossil discoveries to be immediately reported to the property owner who in turn will immediately notify the County Geologist of the discovery.
6. Means and methods to be employed by the paleontological monitor to quickly salvage fossils as they are unearthed to avoid construction delays.
7. Sampling of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates.
8. Procedures and protocol for collecting and processing of samples and specimens.
9. Fossil identification and curation procedures to be employed.
10. Identification of the permanent repository to receive any recovered fossil material. The County of Riverside must be consulted on the repository/museum to receive the fossil material and a written agreement between the property owner/developer and the repository must be in place prior to site grading.
11. All pertinent exhibits, maps and references.
12. Procedures for reporting of findings.

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.

All reports shall be signed by the project paleontologist and all other professionals responsible for the report's content (e.g., Professional Geologist), as appropriate. Two wet-signed original copies of the report(s) shall be submitted to the office of the County Geologist along with a copy of this condition and the grading plan for appropriate case processing and tracking. These documents should not be submitted to the project Planner, the Plan Check staff, the Land Use Counter or any other County office. In addition, the applicant shall submit proof of hiring (i.e. copy of executed contract, retainer agreement, etc.) a project paleontologist for the in-grading implementation of the PRIMP.

PR-3 Prior to Building Final Inspection, the applicant shall submit to the County Geologist one wet-signed copy of the Paleontological Monitoring Report prepared for site grading operations at this site. The report shall be certified by the professionally qualified Paleontologist responsible for the content of the report. This Paleontologist must be on the County's Paleontology Consultant List. The report shall contain a report of findings made during all site grading activities and an appended itemized list of fossil specimens recovered during grading (if any) and proof of accession of fossil materials into the pre-approved museum repository. In addition, all appropriate fossil location information shall be submitted to the Western [Science] Center, the San Bernardino County Museum and Los Angeles County Museum of Natural History, at a minimum, for incorporation into their Regional Locality Inventories. (HELIX 2012)

III. GEOLOGY

Geologically, the project lies within the Perris Block of the northern Peninsular Ranges batholith, which is bounded by the northwest- to southeast-trending San Jacinto and Elsinore fault zones (Morton 2003; Morton and Kennedy 2003; Kennedy and Morton 2003). Geologic formations potentially impacted by earth disturbance activities are shown in Figures 3a and 3b. The key to the identification of the geologic formations is presented as Figure 3c. On Figure 3a, the project, including off-site improvements, is indicated as being underlain by four geological units or formations. On-site, the majority of the project overlies Mesozoic-aged phyllite, a metamorphic rock (colored teal and labeled as "MZp" on Figure 3a). Variably around the western, southern, and eastern perimeter are Quaternary (middle to early Pleistocene) very old sandy alluvial channel deposits (colored yellow and labeled as "$Qvoa_a$" on Figure 3a) that are described

as fluvial sediments deposited on valley floors and consist of moderately to well-indurated, reddish-brown, dissected gravel, sand, silt, and clay-bearing alluvium. According to Morton (2003), the very old sandy alluvial channel deposits are overlain in places by thin, discontinuous alluvial deposits of Holocene age. At the project, the very old alluvial channel deposits overlie the phyllitic bedrock and are less than four feet thick (HELIX 2012). Off-site improvements to Keller Road, east of Winchester Road, impact Quaternary (Holocene and late Pleistocene) young alluvial channel deposits (colored yellow with red dots and labeled as "Qya_a" on Figure 3a) that line the axis of French Valley. These are fluvial deposits consisting of unconsolidated sand, silt, and clay-bearing alluvium (Morton 2003). West of Winchester Road, improvements along Keller Road may impact Cretaceous-aged gabbro, a crystalline plutonic rock (purple areas on Figure 3a).

According to the project's EIR, most of the project is covered by approximately one to two feet of colluvium and topsoil deposits, with thicknesses locally of up to approximately nine feet. The sediments are described as mostly residual, as a result of the *in situ* weathering and degradation of the near-surface bedrock. The colluvium and topsoil generally consist of loose to medium dense, porous, sandy clays to clayey sands (HELIX 2012).

The geology at the southern off-site ROW improvement area is shown on Figure 3b. The majority of the alignment is located within very old sandy alluvial channel/valley deposits ("$Qvoa_a$" and "$Qvov_a$"). An outcrop of gabbro is mapped in the middle of the planned improvements, while the northern tip of the off-site work may impact an outcrop of Cretaceous tonalite, another type of crystalline plutonic rock (Kennedy and Morton 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, for example, they are viewed in the context of local extinction of the organism or habitat Fossils are considered a nonrenewable resource under state and county guidelines (see Section II of this report).

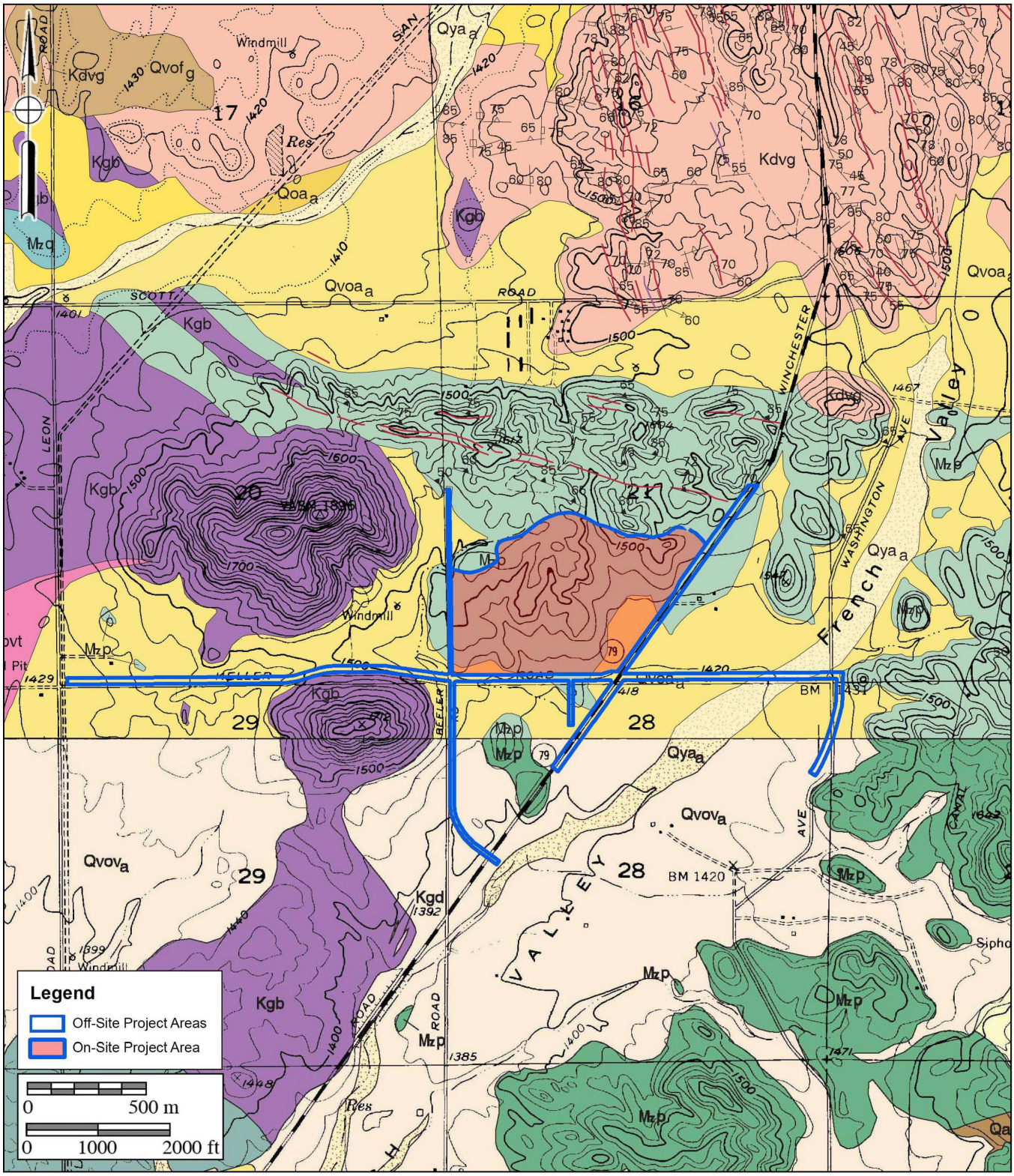


Figure 3a

Geologic Map

The Keller Crossing Project

Geology after Morton (2003) and Morton and Kennedy (2003)

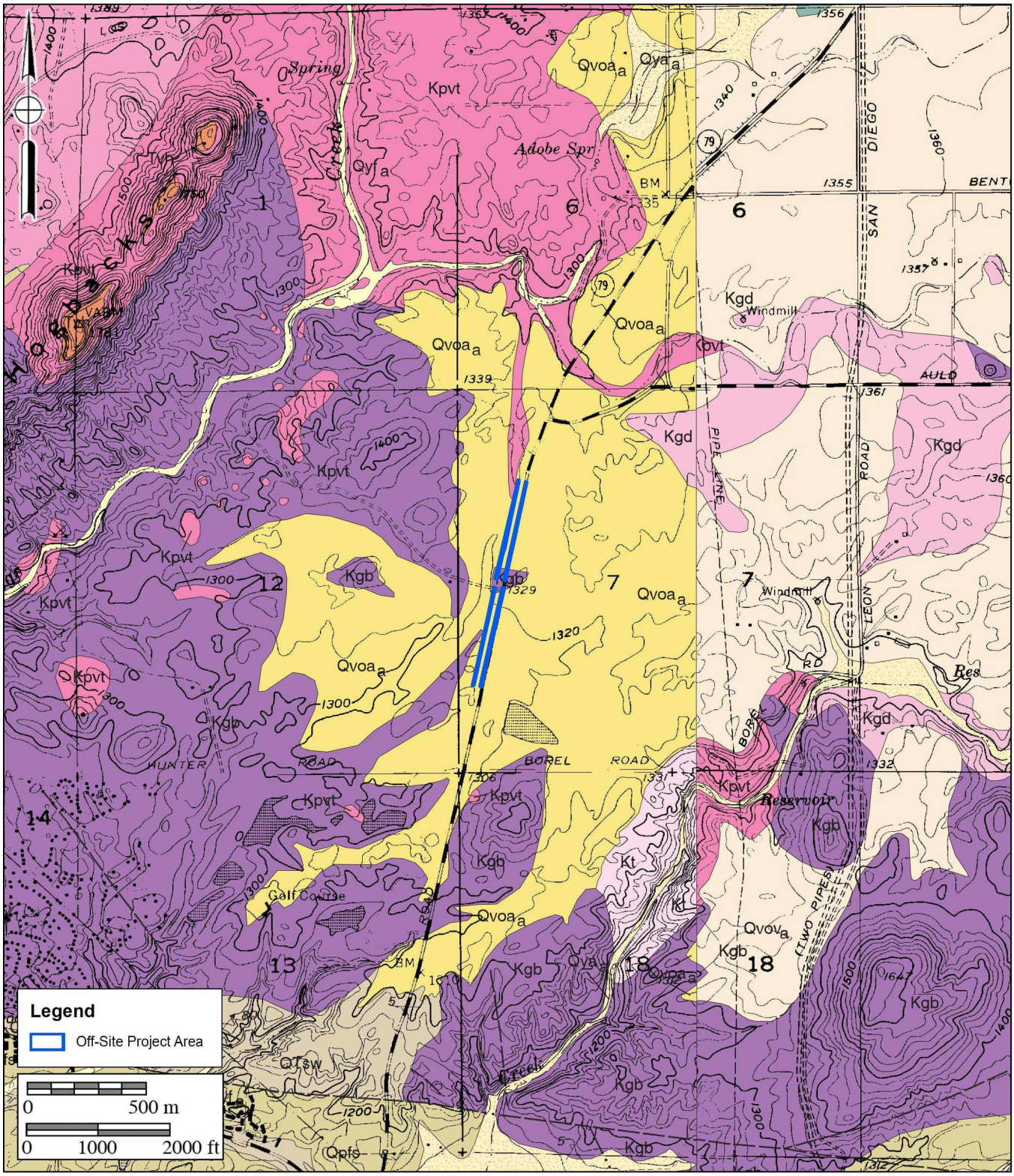


Figure 3b

Geologic Map

The Keller Crossing Project

Geology after Kennedy and Morton (2003) and Morton and Kennedy (2003)

DESCRIPTION OF MAP UNITS

Young surficial deposits

Qya — **Young alluvial channel deposits (Holocene and late Pleistocene)**

Old surficial deposits

Qoa — **Old alluvial channel deposits (late to middle Pleistocene)**

Very old surficial deposits

Qvof — **Very old alluvial fan deposits (middle to early Pleistocene)**

Qvoa — **Very old alluvial channel deposits (middle to early Pleistocene)**

Qvov — **Very old alluvial valley deposits (middle to early Pleistocene)**

Rocks of the Peninsular Ranges batholith

Kdvg — **Granodiorite to tonalite of Domenigoni Valley (Cretaceous)**

Kpvt, Kt — **Tonalite (Cretaceous)**

Kgd — **Granodiorite, undifferentiated (Cretaceous)**

Kgb — **Gabbro (Cretaceous)**

End rocks of the Peninsular Ranges batholith

Mzp — **Phyllite (Mesozoic)**

Figure 3c

Geologic Map Key

The Keller Crossing Project

Geology after Morton (2003), Morton and Kennedy (2003), and Kennedy and Morton (2003)

Fossil Records Search

A paleontological records search was performed by the paleontological collections manager of the Western Science Center in Hemet in Riverside County, and is attached in Appendix B (Radford 2021). Although no fossils are recorded from within the subject property, the records search indicated the presence of late Pleistocene vertebrate fossils associated with the Diamond Valley Lake Project, located approximately three miles north of the Keller Crossing Project. The Diamond Valley Lake Project contained hundreds of fossil localities and thousands of specimens including those associated with mammoth, mastodon, saber-toothed cat, ancient horse, and many other Pleistocene megafauna (Radford 2021). Radford (2021) indicated that the phyllitic rocks are of low paleontological sensitivity, but the Pleistocene alluvial units are considered to be of high paleontological sensitivity and compose many of the region's fossil bearing localities.

Prior paleontological locality record searches were summarized in the project's EIR (HELIX 2012). A records search conducted by the San Bernardino County Museum (SBCM) in 2009 found no nearby fossil localities held by the SBCM, but indicated the presence of the Diamond Valley Lake Project fossils north of the project that were recovered in similar Pleistocene alluvial deposits with those of the project. A records search conducted by the Los Angeles County Natural History Museum (LACM) in 2009 similarly indicated the institution held no fossil locality records near the project. The records search by the LACM indicated that the closest locality in similar older Quaternary (Pleistocene) deposits to the Keller Crossing Project is LACM locality number 7261, located about three miles south-southeast of the project in what is now Skinner Reservoir, which produced specimens of mammoth and bison fossils. The LACM records search indicated, "Shallow grading in the Quaternary deposits exposed in the lesser elevation portions is unlikely to encounter significant fossil vertebrate remains. Deeper excavations into the older Quaternary alluvium may, however, uncover significant fossil vertebrate remains" (HELIX 2012).

Project Survey

Under the direction of Principal Investigator Todd A. Wirths, BFSA field technicians conducted a pedestrian survey of the on-site and off-site project areas on April 13, May 10, and October 22, 2021. The surveys were conducted in five- to 15-meter interval transects. Visibility of the natural ground surface ranged from fair to poor, with 50 to 60 percent of the ground surface visible. Rodent spoil piles and patches of turned soil were closely inspected for evidence of small vertebrate fossils. No evidence of paleontological resources was observed within the on-site or off-site project areas.

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. Holocene alluvium is generally considered to be geologically too young to contain significant, nonrenewable paleontological resources (*i.e.,* fossils), and therefore, is typically assigned a Low paleontological sensitivity. Pleistocene (greater than 11,700 years old) alluvial deposits in western Riverside County and the Inland Empire, however, often yield important Ice Age terrestrial vertebrate fossils, such as extinct mammoths, mastodons, giant ground sloths, extinct species of horse, bison, and camel, saber-toothed cats, and others (Jefferson 1991; Anderson et al. 2002; Springer et al. 1999, 2009). 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, 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.

Under these criteria, based the presence of significant fossil localities in western Riverside County and the strong likelihood that the nearby fossil localities of the Diamond Valley Lake Project originated from similar deposits as those which are mapped at the project, the Pleistocene very old sandy alluvial channel/valley deposits may be considered to have a high potential to yield significant paleontological resources. The surficial Holocene young alluvial channel deposits may be considered to have an undetermined or low potential. Mesozoic crystalline rocks, such as the

outcrops of phyllite and tonalite mapped at the project areas, have no potential to yield paleontological resources.

EIR Paleontological Sensitivity Summary

Based on the analyses contained in the SBCM and LACM paleontological records searches conducted in 2009, the project's EIR considers the lower on-site areas covered by Pleistocene alluvium to have high paleontological sensitivity and the Mesozoic metamorphic rocks to have a low paleontological sensitivity (HELIX 2012). The EIR states:

> Although no paleontological resources were identified on the surface during the field surveys, the results of the records search suggest that they may exist within the project site at shallow undisturbed depths. If unknown buried paleontological resources are impacted during excavation activities, impacts would be considered significant. (HELIX 2012)

This conclusion was also reached for the off-site improvements that impact the non-Mesozoic rock units (termed "Quaternary" in the EIR) (HELIX 2012).

VI. PALEONTOLOGICAL RESOURCE IMPACT MITIGATION PROGRAM

Research has confirmed the existence of potentially fossiliferous Pleistocene very old sandy alluvial channel deposits ("$Qvoa_a$") around the project's western, southern, and eastern perimeter and off-site alignments. The occurrence of terrestrial vertebrate fossils at shallow depths from Pleistocene, older alluvial fan sediments across the Inland Empire of western Riverside County and nearby the project (see Section IV, above) is well documented. Therefore, the "High" paleontological sensitivity rating typically assigned to these Pleistocene older alluvial fan sediments for yielding paleontological resources supports the recommendation that paleontological monitoring be required during mass grading and excavation activities within these deposits in order to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources. Full-time monitoring of undisturbed Pleistocene very old sandy alluvial channel deposits at the on-site and off-site portions of the Keller Crossing Project is recommended starting at five feet below the ground surface. Monitoring of earth disturbance activities in Mesozoic metamorphic rocks ("MZp"), Cretaceous gabbroic and tonalitic rocks ("Kgb, " "Kpvt"), and the Holocene young alluvial channel deposits ("Qya_a") in French Valley is not warranted.

In accordance with requirements of the Riverside County Planning Department, submittal of a PRIMP is required prior to issuance of grading permits. The PRIMP is based on the findings and conclusions stated above and is 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 based on the observations and recommendations of the professional-level project paleontologist. The following guidelines address the required mitigation measures (PR-1, PR-2, and PR-3) outlined in the EIR by HELIX (2012):

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 starting at a depth of five feet within undisturbed very old sandy alluvial channel deposits that underlie the project are to be monitored full-time for paleontological resources. The duration of monitoring may be increased or decreased at the discretion of the project paleontologist based on observations of the geology, stratigraphy, and/or the presence of fossils discovered by the monitor. Prior to the 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.
3. *Identifications and qualifications of the qualified paleontological monitor to be employed for grading operations monitoring:* The primary paleontological monitor will be a Riverside County-qualified paleontologist, or a monitor supervised by a Riverside County-qualified paleontologist.
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 qualified paleontological monitor or the monitors under the direction and supervision of the qualified project paleontologist will be the responsible persons on-site with the assigned authority and responsibility to oversee all grading operations that might adversely affect any salvage efforts.
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:* All paleontological monitors should inform the project paleontologist of the discovery. The project paleontologist, in turn, will notify the property owner and regulatory authorities by phone call or email.
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 resulting from trenching activities is typically from the trench spoils and does not delay the trenching activity. 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. 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 before it is returned to the BFSA laboratory facility. 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 are collected by hand, wrapped in paper, and placed in temporary collecting flats or five-gallon buckets. 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. 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 micro-vertebrate fossils, the standard test is usually the observed presence of small pieces of bone within the sediments. If bone is present, many more 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. The County of Riverside must be consulted on the repository/museum to receive the fossil material and a written agreement between the property owner/developer and the repository must be in place prior to site grading:* Pursuant to the County of Riverside's "SABER" Policy, paleontological materials (fossils) found in Riverside County should, by preference, be directed to the Western Science Center on Searl Road in Hemet, Riverside County, 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 report.
12. *Procedures for reporting findings:* A final written report will be produced by an approved Riverside County 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, and a fossil list identified to the lowest taxonomic level possible, as well as a list of references cited and index and locality maps and graphics to show the locations of all fossil localities, etc. A letter documenting 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 for the Keller Crossing Project and a California Professional Geologist will be the authors 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.

PROFESSIONAL GEOLOGIST
TODD A. WIRTHS
No. 7588
STATE OF CALIFORNIA

July 27, 2022

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

Date

VIII. REFERENCES CITED

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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 10575 Foothill Boulevard Project, City of Rancho Cucamonga, San Bernardino County, California.* Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Assessment for the MorningStar Marguerite Project, Mission Viejo, Orange County, California.* Prepared for T&B Planning. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Monitoring Report for the Nimitz Crossing Project, City of San Diego.* Prepared for Voltaire 24, LP. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Resource Impact Mitigation Program (PRIMP) for the Jack Rabbit Trail Logistics Center Project, City of Beaumont, Riverside County, California.* Prepared for JRT BP 1, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Monitoring Report for the Oceanside Beachfront Resort Project, Oceanside, San California.* Prepared for S.D. Malkin Properties. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Impact Mitigation Program for the Nakase Project, Lake Forest, Orange County, San California.* Prepared for Glenn Lukos Associates, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Impact Mitigation Program for the Sunset Crossroads Project, Banning, Riverside County*. Prepared for NP Banning Industrial, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Assessment for the Ortega Plaza Project, Lake Elsinore, Riverside County*. Prepared for Empire Design Group. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Record Search Update for the Green River Ranch III Project, Green River Ranch Specific Plan SP00-001, City of Corona, California*. Prepared for Western Realco. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Assessment for the Cypress/Slover Industrial Center Project, City of Fontana, San Bernardino County, California*. Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Monitoring Report for the Imperial Landfill Expansion Project (Phase VI, Segment C-2), Imperial County, California*. Prepared for Republic Services, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Assessment for the Manitou Court Logistics Center Project, City of Jurupa Valley, Riverside County, California*. Prepared for Link Industrial. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Resource Impact Mitigation Program for the Del Oro (Tract 36852) Project, Menifee, Riverside County*. Prepared for D.R. Horton. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Assessment for the Alessandro Corporate Center Project (Planning Case PR-2020-000519), City of Riverside, Riverside County, California*. Prepared for OZI Alessandro, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Monitoring Report for the Boardwalk Project, La Jolla, City of San Diego*. Prepared for Project Management Advisors, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

APPENDIX B

Paleontological Records Search

WESTERN SCIENCE CENTER

Brian F. Smith and Associates
Todd Wirths
14010 Poway Road
Poway, CA 92064

April 13, 2021

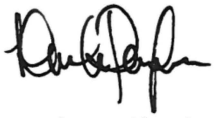
Dear Mr. Wirths,

This letter presents the results of a record search conducted for the Keller Crossing Project in French Valley, Riverside County, California. The project site is located west of Highway 79/Winchester Road, north of Keller Road in Township 6 South, Range 2 West, Section 21 on the *Winchester, CA* USGS 7.5 minute quadrangle.

The geologic units underlying this project are mapped primarily as phyllite deposits dating to the Mesozoic with a small segment of Pleistocene alluvial along the southern border and northwestern corner of the project area, as well as underlying the planned road improvements associated with the project (Morton, Bovard, & Patt, 2003). A map showing the geologic mapping for the area has been included for your reference. Phyllite deposits are considered to be of low paleontological sensitivity and are not known to produce fossil material within the region. The Pleistocene alluvial unites however are considered to be of high paleontological sensitivity and make up many of the region's fossil bearing localities. The Western Science Center does not have localities within the project area or within a one-mile radius, but does have fossil localities roughly three miles to the northeast associated with the Diamond Valley Lake Project in similarly mapped Pleistocene alluvial units. The Diamond Valley Lake Project contained hundreds of fossil localities and thousands of specimens including those associated with Columbian mammoth (*Mammuthus columbi*), Pacific mastodon (*Mammut pacificus*), Sabertooth cat (*Smilodon fatalis*), Ancient horse (*Equus sp.*) and many other Pleistocene megafauna.

Given the phyllite sediments underlying the majority of the project area, it is unlikely that fossil material will be present there. However, should development impact the areas mapped as Pleistocene alluvial the likelihood of paleontological materials would increase and the potential fossil resources would be scientifically significant. It is the recommendation of the Western Science Center that a paleontological resource mitigation plan be put in place to monitor, salvage, and curate any recovered fossils associated with that portion of the project. If you have any questions or would like further information, please feel free to contact me at dradford@westerncentermuseum.org

Sincerely,



Darla Radford, Collections Manager