Appendix I

Paleontological Resources Study
(February 2024)

February 26, 2024

Derek Barbour
Richland Ventures, Inc.
3161 Michelson Drive, Suite 425
Irvine, California 92612

Subject: Paleontological Resources Study for the Ethanac & Case Project, City of Perris, Riverside County, California

Dear Mr. Barbour:

BFSA Environmental Services, a Perennial Company (BFSA), has conducted a focused paleontological resources study update for the Ethanac & Case Project. The proposed 48.89-acre project site is located west of Interstate 215, between Watson and Ethanac roads in the city of Perris, Riverside County, California (Figure 1). The subject is situated within Section 9, Township 5 South, Range 3 West on the U.S. Geological Survey (USGS) (7.5-minute) *Romoland* and *Perris, California* topographic quadrangle maps (Figure 2). The proposed project consists of the development of Assessor's Parcel Numbers (APNs) 327-220-012 and -044.

L&L Environmental, Inc., previously studied this property in a cultural resources assessment dated April 7, 2005, however, paleontological resources were not discussed. This letter focuses upon the potential of the property to contain previously unidentified significant paleontological resources that could be impacted by the proposed development. The scope of work for this paleontological resource review includes a review of fossil localities that may be present in the area, the potential for the geological formation mapped at the project to yield fossils, and recommendations regarding the potential impact the development may have upon any paleontological resources.

Paleontological Records Search

Paleontological record search data from prior BFSA projects indicates the closest fossil localities are located approximately five miles southeast of the project site and were discovered in 2004 during the channelization of Salt Creek (Stewart et al. 2005; Jefferson 2009). This project extended from Lindenberger Road on the west to Rice Road to the east, a distance of about three miles, and yielded remains of giant ground sloth, black bear, extinct horse, extinct camel, extinct

bison (two species), mastodon, and mammoth. For the Salt Creek Project, all of the fossils, totaling 25 localities, were recovered from within a few to several feet from the original ground surface. Camel remains were the most abundant of the large mammals in the fauna and were three times more common than either horse or bison. All of the mammoth remains (a 4.5-foot-long tusk, at least eight ribs, and four vertebrae) may have belonged to a single individual that suffered postmortem breakage due to trampling by large mammals. The identifiable elements were associated with numerous unidentifiable pieces of mammalian bone, not all of which may have been mammoth, based on the presence of camel, bison, and mastodon at the same locality (Stewart et al. 2005). These localities are housed at the Western Science Center (WSC) in Hemet. A closer locality exists approximately four miles southeast of the project site (WSC locality no. IRI-F-1), probably consisting of mammalian fossils of late Pleistocene age as well.

Geology and Paleontology

Geologically, the project site is mapped in late to middle Pleistocene (approximately 0.5-million-year-old and less) old alluvial fan sediments, consisting of indurated deposits of reddish-brown sand ("Qof_a" on Figure 3 after Morton 2003a, 2003b). Some old alluvial fan deposits include a thin, discontinuous surficial layer of Holocene alluvium or include ancient soil zones (paleosols) developed within Pleistocene sedimentary deposits.

Holocene or "modern" alluvium is generally considered to be geologically too young to contain significant, nonrenewable paleontological resources (*i.e.*, fossils) and, therefore, is typically assigned a low paleontological sensitivity. Pleistocene (greater than 11,700 years old) alluvial and alluvial fan deposits in the Inland Empire, however, often yield important Ice Age terrestrial vertebrate fossils such as extinct mammoths, mastodons, giant ground sloths, extinct species of horse, bison, and camel, saber-toothed cats, and others (Jefferson 1991). These Pleistocene sediments are thus accorded a high paleontological resource sensitivity.

In the southern California desert regions, the fossil bones of vertebrates have been found in Pleistocene paleosols (Stewart and Hakel 2016, 2017, 2019). However, the paleosols identified in the March Air Reserve Base, Perris, and Menifee areas have yet to produce vertebrate fossils.

City of Perris Sensitivity Assessment

On the Paleontological Sensitivity Map in the Conservation Element of the City's General Plan (City of Perris 2005 [Exhibit CN-7]), the project site is located within Area 2, which is assigned a "high" paleontological sensitivity based on the presence of Pleistocene older alluvial deposits. Projects located within Area 2 require that paleontological monitoring be initiated once any excavation begins (City of Perris 2005 [Goal IV.A.4]).

Green Valley Specific Plan Final Environmental Impact Report: Paleontology

The project is within the boundaries of the Green Valley Specific Plan, as outlined in the Addendum for the Plan's Final Environmental Impact Report (FEIR; Ascent Environmental 2022). In the FEIR, it was determined that significant paleontological resources could be adversely

impacted during earth disturbance activities, therefore the following mitigation measure is required for projects within the Green Valley Specific Plan:

> **Mitigation Measure PALEO-1**: Prior to the issuance of grading permits, the project applicant shall submit to and receive approval from the City, a Paleontological Resource Mitigation Monitoring Program (PRMMP). The PRMMP shall include the provision of a qualified professional paleontologist (or his or her trained paleontological monitor representative) to be on-site for any project-related on-site and off-site subsurface excavation that exceeds three (3) feet in depth. Selection of the paleontologist shall be subject to approval of the City of Perris Director of Development Services and no grading activities shall occur at the site until the paleontologist has been approved by the City.
>
> Monitoring shall be restricted to undisturbed subsurface areas of older Quaternary alluvium, which might be present below the surface. The approved paleontologist shall be prepared to quickly salvage fossils as they are unearthed to avoid construction delays. The paleontologist shall also remove samples of sediments which are likely to contain the remains of small fossil invertebrates and vertebrates. The paleontologist shall have the power to temporarily halt or divert grading equipment to allow for removal of abundant or large specimens.
>
> Collected samples of sediments shall be washed to recover small invertebrate and vertebrate fossils. Recovered specimens shall be prepared so that they can be identified and permanently preserved. Specimens shall be identified and curated and placed into an accredited repository (such as the Western Science Center or the Riverside Metropolitan Museum) with permanent curation and retrievable storage. A report of findings, including an itemized inventory of recovered specimens, shall be prepared upon completion of the steps outlined above. The report shall include a discussion of the significance of all recovered specimens. The report and inventory, when submitted to the City of Perris Planning Division, would signify completion of the program to mitigate impacts to paleontological resources.

Conclusions

The project parcels are rated by the City of Perris to have a high potential to yield significant paleontological resources. As such, the City of Perris and the FEIR require that monitoring be conducted within deposits having a high paleontological sensitivity. The City of Perris will require the preparation of Paleontological Resource Mitigation Monitoring Program (PRMMP), to be submitted for their approval prior to the issuance of grading permits, for the project. The proposed PRMMP would describe monitoring and fossil collection procedures in accordance with City of Perris guidelines and Mitigation Measure PALEO-1 of the FEIR

Sincerely,

Todd A. Wirths, M.S., P.G. 7588
Senior Paleontologist, California Professional Geologist

Attachments: Figures 1 through 3

References:

Ascent Environmental. 2022. Addendum to the Green Valley Specific Plan Final Environmental Impact Report for the Phase 2 Project Area. Prepared for the City of Perris, California, by Ascent Environmental, Inc., Sacramento, California.

City of Perris. 2005. Conservation Element, City of Perris General Plan. Electronic document, http://www.cityofperris.org/city-hall/general-plan/Conservation_Element_01-08-09.pdf.

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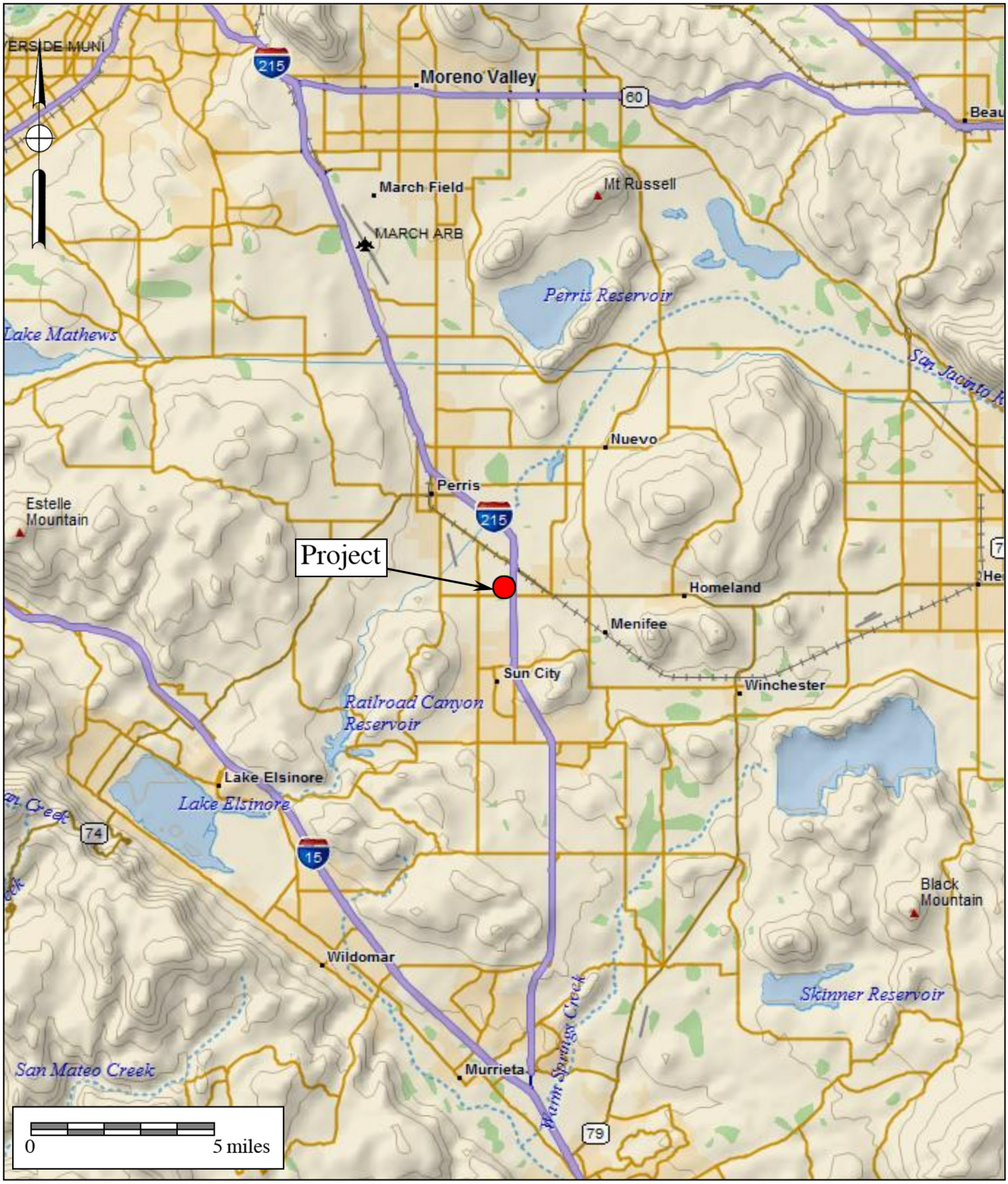
Stewart, J.D., and Hakel, M. 2017. First record of vertebrate fossils in the Searles Basin: in another desert paleosol. *In*, Reynolds, R.E., ed., ECSZ Does It: Revisiting the Eastern California Shear Zone. California State University Desert Studies Center: 2017 Desert Symposium Field Guide and Proceedings, p. 341.

Stewart, J.D., and Hakel, M. 2019. The first Pleistocene paleosol vertebrate fossils in Ridgecrest, Kern County, CA. *In*, Miller, D.M., ed., Exploring ends of eras in the eastern Mojave Desert. 2019 Desert Symposium Field Guide and Proceedings, p. 204-205.

Stewart, J.D., Kennedy, G.L., and Shiller, G.I. 2005. Paleontological monitoring report, construction of Salt Creek Channel, Stage 6, Winchester region, Riverside County, California. Unpublished paleontological report prepared for L.D. Anderson, Incorporated, Bloomington, California, by Brian F. Smith and Associates, Poway, California.

ATTACHMENT A

Figures



BFSA Environmental Services
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Figure 1

General Location Map

The Ethanac & Case Project

DeLorme (1:250,000 series)

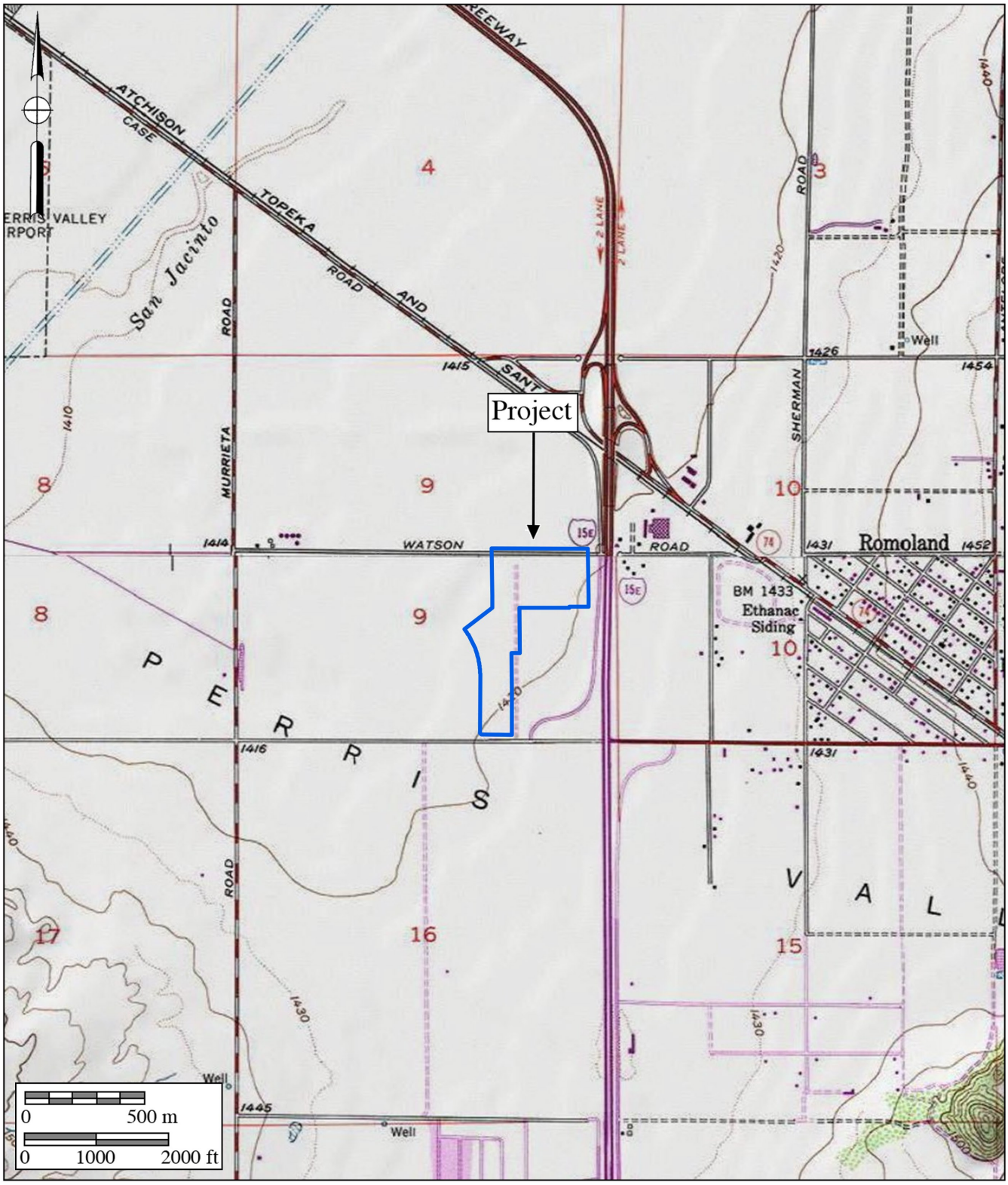

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Figure 2

Project Location Map

The Ethanac & Case Project

USGS *Romoland* and *Perris* Quadrangle (7.5-minute series)

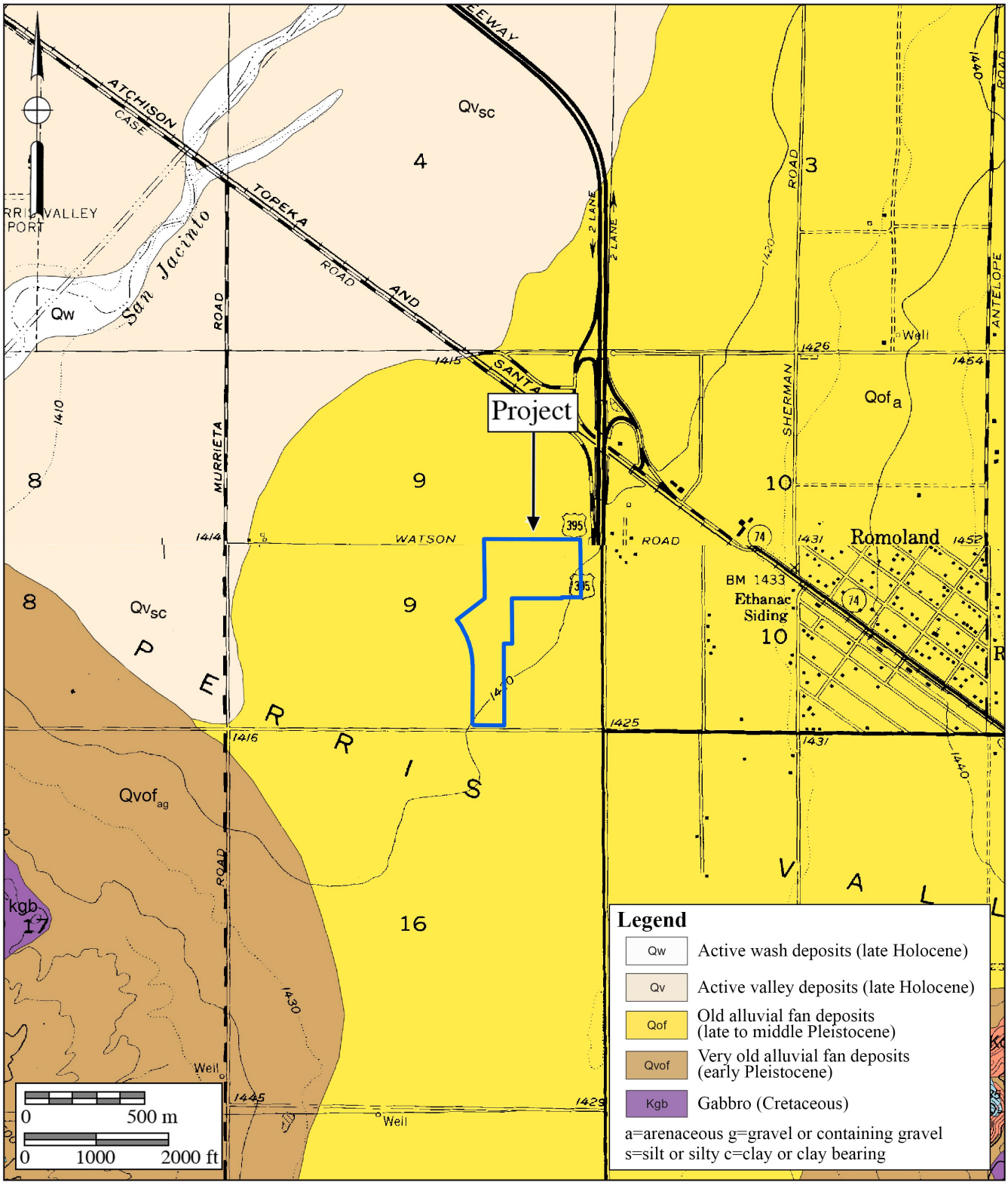

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Figure 3

Geologic Map

The Ethanac & Case Project

Geology after Morton (2003a, 2003b)