



July 31, 2019

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Mr. Hardy:

This letter report documents the results of the paleontological resources monitoring and mitigation program undertaken for the Richland Stoneridge Project (Project). (See Figure 1 Location and Vicinity Map).

The scope of work for this report included a paleontological records search through the Natural History Museum of Los Angeles County's Vertebrate Paleontology Section, a literature search, a review of geological maps, County of Riverside General Plan (2015), and impact analyses that are documented below. No pedestrian survey was undertaken for this report.

## **PROPOSED PROJECT AND LOCATION**

The proposed Project provides for the development of a 699.5-acre master development that would amend the approved "Stoneridge" specific Plans (SP No. 239) by adding approximately 116.5 acres to the Specific Plan boundary, and modify the Specific Plan Land Use Designations to provide light industrial, business park, commercial retail, and open space land uses in lieu of the approved residential town center, and commercial Specific Plan land uses. The project site is located within the Lakeview/Nuevo Area of unincorporated Riverside County, south of Ramona Expressway, north of Nuevo Road, west of the San Jacinto River, and east of Foothill Drive.

The proposed project modifies the Land Use Designations for the existing 574-acre Specific Plan area and adds approximately 116.5 acres of undeveloped land to the northwestern portion of the Specific Plan boundary. The proposed Project provides for the development of 442.8 acres of Light Industrial uses, 83.5 acres of Business Park uses, 13.3 acres of Commercial Retail uses, 118.2 acres of Open Spaces, and 41.8 acres of Circulation. Access to the Project site from the north will be provided via Ramona Expressway and from the south via Nuevo Road.

The Project lies just east of the City of Perris. As shown in Figure 1, the project is in sections 14, 15, and 23, Township 4 South, Range 3 West, San Bernardino Baseline and Meridian on the Perris 7.5-minute US Geological Survey quadrangle. The Project parcel lies south and east of the Bernasconi Hills, and east of a series of lower unnamed hills. The footprint incorporates the eastern edge of some of these hills on its western border. Apart from the two hills on the western edge, the parcel slopes gently to the east. The elevation of the project site ranges from approximately 1400 to 1880 feet above mean sea level (AMSL).

## **GEOLOGICAL SETTING**

The project site is located in the Peninsular Range Geomorphic Province of California. This province encompasses western Riverside County. The Project sits near the eastern margin of the Perris Block, which is bounded on the east by the San Jacinto Fault. Crystalline rocks in Moreno Valley include late Jurassic and Cretaceous granitic rocks of the southern California Batholith. These resistant rocks weather to form gray- or tan-colored, boulder covered, conical buttes and hills.

The project site is in the San Jacinto River Valley, and lies to the west of the San Jacinto River. Dibblee (2003) maps the geology of the site as Qa, surficial sediments (Holocene Epoch), Qoa, older surficial sediments, specifically alluvial fan gravel and sand and (Pleistocene Epoch), and qdh, quartz diorite, hornblende-rich (Peninsular Range batholith, Cretaceous Period)(Figure 2). The mapping of Morton (1972) shows the project site to be located on older Qal and Qal1.

Multiple sites within seven miles of the Project have produced Pleistocene mammals and other fossils (Reynolds, 2008). In addition, an extensive late Pleistocene biota was recovered from excavations at Diamond Valley Reservoir in Hemet (Anderson *et al.*, 2002; Springer and Scott, 1994; Springer *et al.*, 1998; Springer *et al.*, 1999; Springer, *et al.*, 2009).

## **THE REGULATORY SETTING**

### **State**

The California Environmental Quality Act (CEQA) provides protection for paleontological resources through environmental legislation. Direction regarding significant impacts on paleontological resources is found under Appendix G (part V) of the CEQA Guidelines. The guidelines state, "A project will normally result in a significant impact on the environment if it will ...disrupt or adversely affect a paleontological resource or site or unique geologic feature, except as part of a scientific study." Per section 5097.5 of the Public Resource Code, it is unlawful to remove paleontological remains without authorization and can result in a misdemeanor. In addition, Section 622.5 of the California Penal Code sets the penalties for damage or removal of paleontological resources.

### **Riverside County**

The County of Riverside's General Plan recognizes the CEQA Guidelines Section 15064.5 as a threshold for the identification and protection of historic resources, archaeological and paleontological resources as well as the determination of significant impacts on those resources. In addition, the County's General Plan includes several Multipurpose Open Space policies to reduce or minimize the effects of development on historic, archaeological and paleontological resources (County of Riverside, 2015). Among them are:

*OS 19.8. "Whenever existing information indicates that a site proposed for development may contain biological, paleontological, or other scientific resources, a report shall be filed stating the extent and potential significance of the resource that may exist within the proposed development and appropriate measures through which the impacts of development may be mitigated."*

*OS 19.9. "This policy requires that when existing information indicates that a site proposed for development may contain paleontological resources, a paleontologist shall monitor grading activities with the authority to halt grading to collect uncovered paleontological resources, curate any resources collected with an appropriate repository, and file a report with the Planning Department documenting and paleontological resources that are found during the course of site grading."*

The County of Riverside has provided a paleontological sensitivity map to assist in determining a property's sensitivity. It shows most of the Project area rated low with some High B paleontological sensitivity near the hills. A rating of High B indicates that there is a high likelihood that a project could disturb significant paleontological resources, but that they are a few feet beneath the ground surface.

## **PROFESSIONAL STANDARDS**

The Society of Vertebrate Paleontology (SVP) 2010 guidelines provided Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. These guidelines are recognized throughout the paleontological resource management community.

## **SCOPE OF STUDY AND PERSONNEL**

This paleontological Resources Assessment was compiled by Dr. Joe Stewart, PhD. Qualifications of author are provided in Attachment A.

## **PALEONTOLOGICAL RESOURCES**

### **Records Search**

ECORP requested a paleontological records search from the Natural History Museum of Los Angeles County (LACM). The report (MacLeod 2019, Appendix A) stated that the museum does not have any fossil localities within a mile of the Project boundaries. The LACM has a record of horse fossil (*Equus*) approximately 10 miles south of the project at Railroad Canyon Reservoir. MacLeod (2019, Appendix A) concluded that shallow excavations in both the coarse older Quaternary Alluvium and the finer-grained younger Quaternary Alluvium found at the surface in the eastern portions of the proposed project area, probably will not uncover any significant vertebrate fossils. Deeper excavations in the latter areas that extend down into the older and perhaps finer-grained sedimentary deposits, however, may well encounter significant fossil vertebrate remains. Any substantial excavations in the sedimentary deposits in the proposed project area, therefore, should be closely monitored to quickly and professionally collect any fossils discovered without impeding development. MacLeod added that sediment samples should also be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

### **Literature Review**

A geotechnical investigation was done for the Project (LGC Geotechnical, Inc. 2017). It was based on 13 hollow-stem borings from 5 to 52 feet and 10 test pits. The geologic units they recognized onsite were

Quaternary Very Old Fan Deposits (Qvof) and Cretaceous Lakeview Mountain Tonalite (Klmt). They reported that the upper 4 to 12 inches of the Qvof showed rootlets due to agricultural disturbances and uses. No geologic structure was observed in either deposit; they were described as massive. The deepest deposits of Qvof were on the east side of the Project footprint. One of the test pits did produce caliche (pedogenic calcium carbonate) at a depth of 1.75 to 7.5 feet, and toward the western edge of the Qvof. Caliche can be an indicator of the presence of paleosols.

There are numerous fossil specimens from Diamond Valley Lake, also about 10 miles away, but to the southeast (Anderson et al. 2002; Springer and Scott, 1994; Springer et al., 1998, 1999, 2009). The biota from these localities include spruce trees, mammoths, mastodons, ground sloths, dire wolves, short-faced bears, sabre-toothed cats, large and small horses, large and small camels, and bison.

Recent discoveries in Riverside and other counties in southern California have revealed that Pleistocene fossil soils (paleosols) produce vertebrate fossils in some places (Stewart *et al.* 2012; Raum *et al.* 2014; Stewart and Hakel 2016, 2017, 2019). There are no published fossils from paleosols in the Parris area, but I have observed Pleistocene paleosols less than 4 miles west and two miles northwest of the Project footprint in Perris. I have also seen them at Grand Terrace and at Moreno Valley. As a pedestrian survey was not part of this document, it is not known whether paleosols are present within the Project footprint.

## CONCLUSIONS

Because the paleontological records search recommends construction monitoring and sediment sampling, the geologic mapping shows some Pleistocene sediments at the surface, Pleistocene fossil soils have been found in several nearby areas, and Pleistocene vertebrate fossils have been found in the vicinity, it is recommended a site visit be conducted by a qualified professional paleontologist once the vegetation removal has taken place. If the results indicate a need for paleontological monitoring of construction excavations, there will be a recommendation of the formulation of a Paleontological Resource Impact Management Plan that would reduce the Project impacts to paleontological resources to a less than significant level.

Sincerely,

A handwritten signature in black ink that reads "Joe D. Stewart". The signature is written in a cursive, flowing style.

Dr. Joe Stewart, PhD.  
Principal Paleontologist

## REFERENCES

- Anderson, R. S., M. J. Power, S. J. Smith, K. B. Springer, and E. Scott. 2002. Paleoecology of a Middle Wisconsin deposit from southern California. *Quaternary Research* 58:310-317.
- Dibblee, T. W. 2003. Geologic map of the Perris Quadrangle, Riverside County, California. Dibblee Foundation Map DF-112. Scale 1:24,000.
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[https://planning.rctlma.org/Portals/14/genplan/general\\_Plan\\_2017/elements/OCT17/Ch05\\_MOSE\\_120815.pdf?ver=2017-10-11-102103-833](https://planning.rctlma.org/Portals/14/genplan/general_Plan_2017/elements/OCT17/Ch05_MOSE_120815.pdf?ver=2017-10-11-102103-833)
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- LGS Geotechnical, Inc. 2017. Preliminary Geotechnical Evaluation, Proposed "StoneRidge" Phase 1 Development, Tentative Tract Map No. 32372, Unincorporated Territory of Riverside County, California. Prepared for: Craig Cristina, Richland Communities, Inc., 3161 Michelson Drive, Suite 425, Irvine, CA 92626. Prepared by: LGS Geotechnical, Inc., 131 Calle Iglesia, Suite 200, San Clemente, CA 92672.
- Society of Vertebrate Paleontologists (SVP). 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. 11 pp. Website: [http://vertpaleo.org/The-Society/Governance-documents/SVP\\_Impact\\_Mitigation\\_Guidelines.aspx](http://vertpaleo.org/The-Society/Governance-documents/SVP_Impact_Mitigation_Guidelines.aspx)
- Springer, K. B. and E. Scott. 1994. First record of late Pleistocene vertebrates from the Domenigoni Valley, Riverside County, California. *Journal of Vertebrate Paleontology* 14:47A.
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- Stewart, J. D., and M. E. Hakel. 2016. Pleistocene paleosol developed on ancestral Mojave River sediments near Hinkley, California. *Paleobios* 33 Supplement: 15.
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Stewart, J. D., and M. E. Hakel. 2019. The first Pleistocene paleosol vertebrate fossils in Ridgecrest, Kern County, CA. *Desert Symposium Proceedings* 2019:204-205.

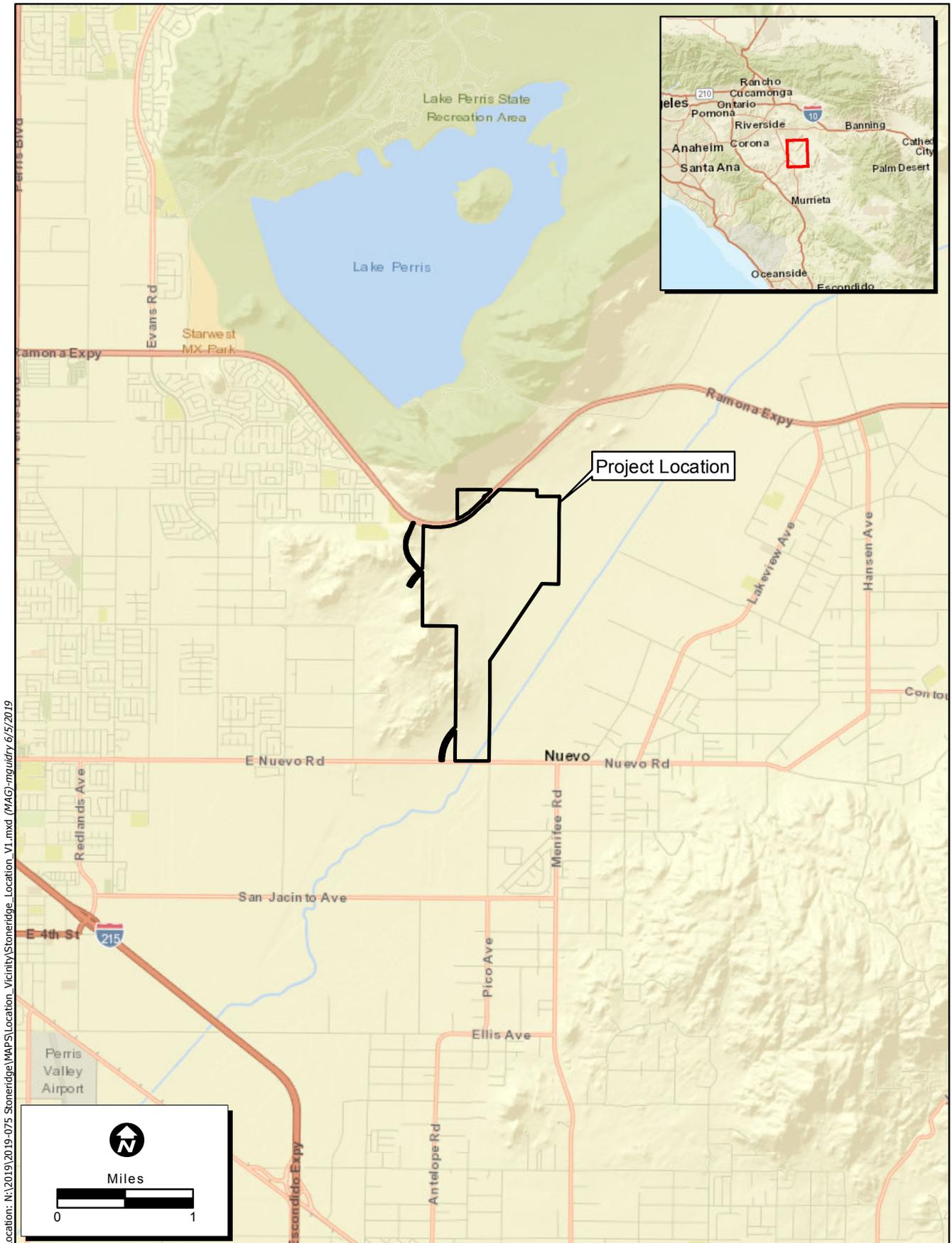
Stewart, J. D., M. Williams, M. Hakel, and S. Musick. 2012. Was it washed in? New evidence for the genesis of Pleistocene fossil vertebrate remains in the Mojave Desert of southern California. *California State University Desert Symposium Proceedings* 2012:140-143.

## **LIST OF FIGURES**

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Figure 1. Project Location

Figure 2. Geology

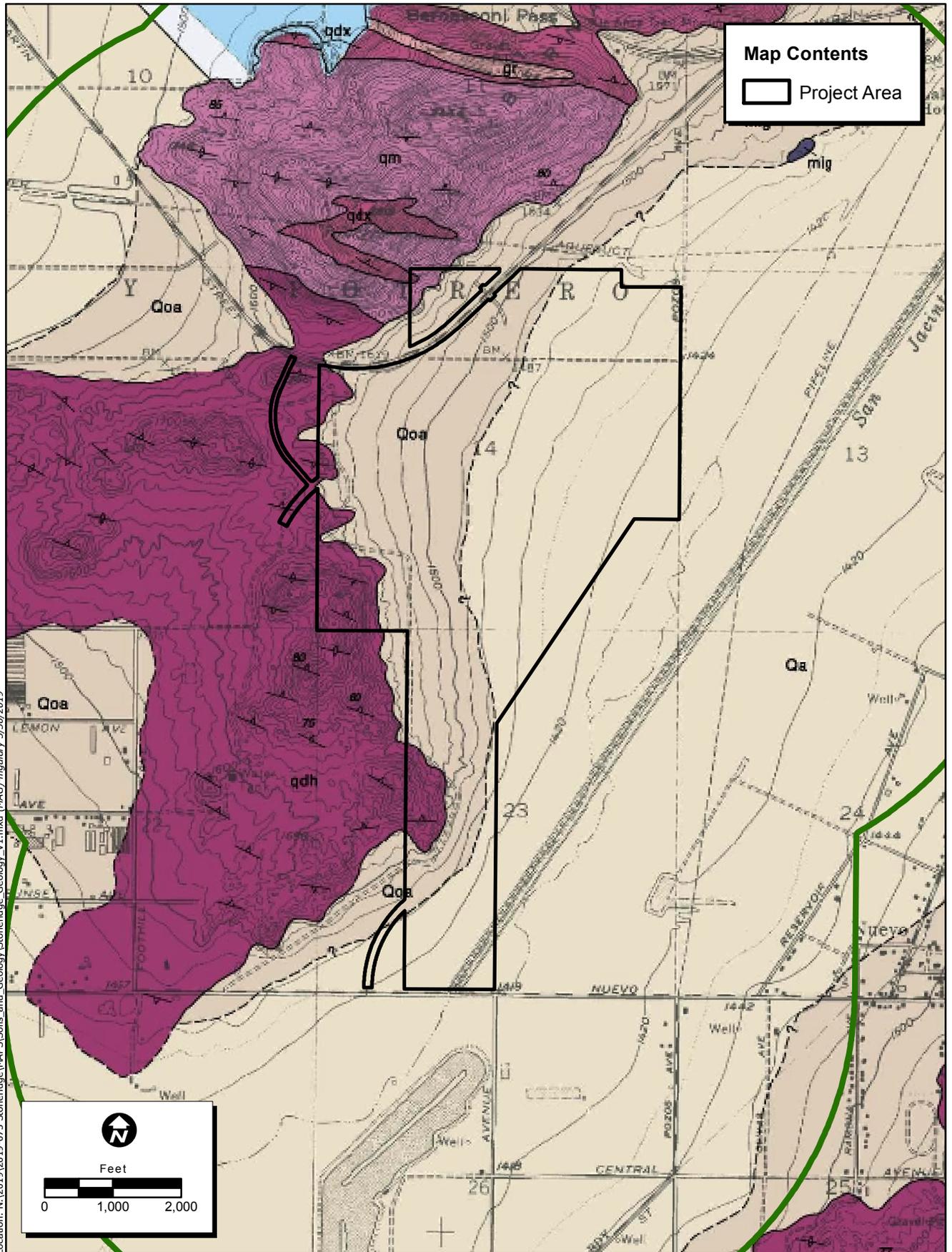


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Map Date: 6/5/2019  
 Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

**Figure 1. Project Location**

2019-075 Stoneridge



Location: N:\2019\2019-075 Stoneridge\MAPS\Soils and Geology\Stoneridge\_Geology\_V1.mxd (MAG:mguidry 5/30/2019)

Map Date: 5/30/2019  
 Source: Geologic map of the Perris quadrangle, Riverside County

**Figure 2. Geology**  
 2019-075 Stoneridge

## **ATTACHMENT A**

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Qualifications of Author

# Joe Stewart, Ph.D.

## Senior Paleontologist, Principal Investigator

Joe Stewart is a vertebrate paleontologist with over 40 years of experience in paleontology and 33 years of experience with the geology and paleontology of California. He received a B.A. in Systematics and Ecology at the University of Kansas in 1979, and a Ph.D. in Systematics and Ecology at the University of Kansas in 1984. His main experience is with the paleontological resources of California, but he also has experience with projects in Wyoming, Utah, Colorado, Arizona, Nevada, Idaho, and Nebraska, and a substantial research history in Kansas. Dr. Stewart has extensive experience with permitting projects subject to CEQA and NEPA. His expertise includes the identification of fish fossils and Pleistocene microvertebrate faunal remains. He directed the paleontological monitoring and mitigation program for Path 15, a major transmission line project, and the paleontological aspects of permitting for the Gateway West transmission line project in Wyoming and Idaho. Joe has multiple BLM permits. He has published over 40 peer-reviewed paleontology articles in scientific books and journals. He is also a Research Associate at the Natural History Museum of Los Angeles County.

## Education

Ph.D., Systematics and Ecology, University of Kansas

B.A., Systematics and Ecology, University of Kansas

## Registrations, Certifications, Permits and Affiliations

- Riverside County Qualified Paleontologist
- Orange County Certified Paleontologist
- Principal Investigator on BLM California Paleontology Permit
- Research Associate, Natural History Museum of Los Angeles County

## Professional Experience

**Ivanpah Control Project, San Bernardino, Kern, and Inyo Counties – Southern California Edison (2018-2019).** Reviewed paleontological resources aspects of Southern California Edison's Ivanpah-Control Project proponent's environmental assessment (PEA) filing for California Public Utilities Commission.

**Strauss Wind Energy Project EIR, Santa Barbara County – Santa Barbara County Planning Department (2018).** Revised paleontological resource sections of an earlier EIR.

**San Onofre Nuclear Generating Station (SONGS) Units 2 & 3 Decommissioning Project, San Diego County – Southern California Edison (2018).** Reviewed draft Paleontological Resources Mitigation and Monitoring Plan.

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**Puerco Canyon Camp and Trailhead Project, Malibu, Los Angeles County (2018).** Wrote the paleontological resources section of the EIS/EIR.

**Qualcomm Stadium Reconstruction, San Diego (2015-2016).** Wrote paleontological resources technical report and wrote paleontological resources sections of EIR.

**Foster Road Storm Drain Stage I, Temescal Creek – Riverside County Flood Control and Water Conservation District (2015-2016).** Monitored construction, supervised sediment sample processing, and wrote final report.

**Crenshaw/LAX Transit Corridor Rail Project, Los Angeles – Los Angeles County Metropolitan Transportation Authority (2014-2015).** Oversaw paleontological resources monitoring and mitigation of construction activities.

**SR-91 Corridor Improvement Project (2013-2017).** Wrote Paleontological Mitigation Plan and supervised paleontological monitoring and mitigation of construction activities.

**Calico Mineral Exploration Project, San Bernardino County (2013).** Obtained BLM Fieldwork Authorization, surveyed 350 acres, processed sediment samples, identified fossils, and wrote paleontological assessment for permitting of project.

**I-15/I-215 Interchange Improvement Project, Devore, San Bernardino County (2012-2013).** Supervised paleontological monitoring and mitigation of construction activities.

**Sun Valley to Morgan 500/230kV Transmission Line Project, Los Angeles County (2011-2012).** Wrote paleontological resources technical report for the project.

**California High Speed Rail Project, Palmdale to LA Union Station Segment (2010-2014).** Supervised pedestrian survey of Palmdale to LA Union Station Segment of the California High Speed Rail Project. Wrote paleontological resources technical report and paleontological sections of the EIS/EIR.

**Westside Subway Extension Draft EIS/EIR, Los Angeles County – Los Angeles County Metropolitan Transportation Authority (2009-2010).** Directed paleontological survey of route and wrote paleontological pedestrian survey. Wrote paleontological resources section of the draft EIS/EIR.

**I-805 Managed Lanes South Project, San Diego County – SANDAG (2008-2009).** Directed paleontological survey of 11.4-mile long project area in San Diego, National City, and Chula Vista and wrote the Paleontological Resource Assessment.

**I-805 North Corridor Project, San Diego County – SANDAG (2008).** Directed paleontological survey of 4.4-mile long project area in San Diego and wrote the Paleontological Resource Assessment.

**Mesquite General Aviation Airport Replacement Project, Mesquite, Nevada – Federal Aviation Administration (2009).** Researched geological literature and paleontological records and wrote the paleontological resources assessment.

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**Solar 1 Solar Energy Project, San Bernardino County (2008).** Obtained BLM Fieldwork Authorization, supervised survey of 7,700 acres, and wrote paleontological resources section of Application for Certification submitted to the California Energy Commission.

**CalNev Pipeline Project, San Bernardino County and Clark County, Nevada - Kinder-Morgan (2008-2009).** Wrote the paleontological assessment based on records and literature searches and a paleontological survey of the 234-mile long proposed petroleum pipeline from Colton, CA to Las Vegas, NV. Directed the survey on private and federal lands.

**Cajon Main Third Track, Summit to Keenbrook Project, San Bernardino County – BNSF Railway (2007).** Participated in the writing, editing, and production of the Paleontological Resources Monitoring and Mitigation Plan and the Paleontological Resources Assessment.

**Ausra-Carrizo Solar Project, San Luis Obispo County (2007).** Participated in survey of 960 acres and edited the Application for Certification submitted to the California Energy Commission.

**Heritage Fields/The Great Park, City of Irvine, Orange County (2006-2007).** Participated in pedestrian survey of 3,700 acres, supervised excavations at three sites, and wrote the final technical report.

**Path 15 500-kV Power Transmission Line From Los Banos Substation to Gates Substation (2003-2005).** Supervised paleontological resource monitoring, excavations, specimen preparation, specimen identification, and report writing for 80-mile power line.

## Selected Professional Publications/Papers/Presentations

- 2012 **Stewart, J. D.**, M. Williams, M. Hakel, and S. Musick. Was it washed in? New evidence for the genesis of Pleistocene fossil vertebrate remains in the Mojave Desert of southern California. *California State University Desert Symposium Proceedings* pp. 140-143.
- 2009 Bell, M. A., **J. D. Stewart**, and J. Park. The world's oldest fossil threespine stickleback. *Copeia* 2009:256-265.
- 2009 Tseng, J.Z., X. Wang, and **J.D. Stewart**. A new otter-like immigrant mustelid (Carnivora, Mammalia) from the middle Miocene Temblor Formation of Central California. *PaleoBios* 29:13-23.
- 2008 Kelly, T. S., and **J. D. Stewart**. New records of Middle and Late Miocene Perissodactyla and Artiodactyla from the western border of the San Joaquin Valley, Diablo Range, Fresno County, California. *Los Angeles County Museum of Natural History Contributions in Science* 516:1-29.
- 2007 Tseng, Z., X. Wang, and **J. D. Stewart**. Tough new world: discovery of an unusual immigrant mustelid with crushing dentition from the middle Miocene of coastal California. *Journal of Vertebrate Paleontology* 27:160A.
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