

Brian F. Smith and Associates, Inc.

Archaeology / Bíology / Hístory / Paleontology / Air Quality / Traffic / Acoustics

October 29, 2019; *Revised* September 24, 2020

Mr. John Condas Allen Matkins 1900 Main Street, 5th Floor Irvine, California 92614

Subject: Paleontological Resource and Mitigation Monitoring Assessment, IDI Rider 2 & 4 High Cube Warehouses and PVSD Channel Improvement Project, City of Perris, Riverside County, California (APNs 303-160-002, -003, and -007 to -010 and 303-170-004, -005, -011, and -014 to -017)

Dear Mr. Condas:

Introduction and Site Location: A paleontological resource and mitigation monitoring assessment has been completed for the IDI Rider 2 & 4 High Cube Warehouses and PVSD Channel Improvement Project in the city of Perris, west of the Perris Reservoir in Riverside County, California (Attachments 1 and 2). The project consists of the 65-acre Rider 2 and 4 development, approximately 4.5-acres of off-site improvements, and a 29.7-acre segment of the Perris Valley Storm Drain (PVSD) Channel located east of Redlands Avenue between and on Rider and Morgan streets in the city of Perris, Riverside County, California. The subject property consists of Assessor's Parcel Numbers (APNs) 303-160-002, -003, and -007 to -010 and 303-170-004, -005, -011, and -014 to -017 within Section 8, Township 4 South, Range 3 West of the USGS *Perris, California* 7.5' topographic quadrangle. The subject property has previously undergone agricultural usage (Mitchell and Trazo 2017a, 2017b), but is currently covered with non-native weeds and grasses.

The project involves the construction and operation of two industrial buildings (Rider 2 and Rider 4) totaling 1,373,449 square feet, the construction and subsequent operation and maintenance of improvements to the PVSD Channel along the eastern portion of the property, and associated off-site improvements to Morgan and Rider streets. Improvements to the PVSD Channel extend north to just past Ramona Expressway and south of Rider Street, and include the construction of bridges, roads, and sidewalks, in addition to widening the channel to 550 feet. The PVSD Channel improvements include protecting the east-to-west-oriented Colorado River Aqueduct (CRA), which bisects the middle of the project below the surface (see Attachment 2). The CRA is within a Metropolitan Water District (MWD) easement. Downstream (south) of the

CRA, the existing PVSD Channel would be deepened to a 56-foot-wide, five-foot-deep, low-flow channel. The geotechnical reports for the project (Mitchell and Trazo 2017a, 2017b) call for at least four feet of over-excavation across the site, and at least three feet below the proposed foundation-bearing grade. Excavations will primarily be conducted within the PVSD Channel improvement area. The Rider 2 and 4 industrial sites will be raised in elevation and will utilize the excavated soil from this improvement area. Proposed depths and extent of trenching for wet utilities (sewer mains and storm drains) are unknown but are not expected to be significantly deep. The two infiltration basins are proposed to extend to a depth of $13\pm$ feet below the existing site grades.

Regulatory Setting: The City of Perris has allocated requirements addressing paleontological resources in the Conservation Element of the City of Perris General Plan, which "provides goals and policies as a framework for the management, preservation, and use of the City's resources" (City of Perris 2005:26-27; Exhibit CN-7). Goals, policies, and implementation measures specific to paleontological resources are as follows:

Measure IV.A.4: In Area 1 and Area 2 shown on the Paleontological Sensitivity Map [Exhibit CN-7], paleontological monitoring of all projects requiring subsurface excavations will be required once any excavation begins. In Areas 4 and 5, paleontological monitoring will be required once subsurface excavations reach 5 feet in depth, with monitoring levels reduced if appropriate, at the discretion of a certified Project Paleontologist. (City of Perris 2005:47)

Based on the Paleontological Sensitivity Map in the Conservation Element of the City of Perris General Plan (City of Perris 2005, Exhibit CN-7), the IDI Rider 2 & 4 High Cube Warehouses and PVSD Channel Improvement Project is located within Area 4, which requires paleontological monitoring beginning at a depth of five feet beneath the surface.

The project is within the boundaries of a "specific plan" drafted by the City of Perris called the Perris Valley Commerce Center (PVCC) Specific Plan (City of Perris 2011). The PVCC Specific Plan Final Environmental Impact Report (FEIR) includes mitigation measures addressing cultural resource impacts, which includes paleontological resources (City of Perris n.d.). Mitigation Measure MM Cult 1 outlines the requirements for preparation of a Phase I Cultural Resources Study to determine whether the subject development would potentially cause a substantial adverse change to any significant paleontological resources, which have been addressed through the preparation of this paleontological resource assessment. MM Cult 5 would be applicable to the proposed IDI Rider 2 & 4 High Cube Warehouses and PVSD Channel Improvement Project, should a Mitigation Monitoring and Reporting Program (MMRP) be proposed herein (see below). *Geology:* The geology of the project site and immediately surrounding areas is shown on the published geologic map of the Perris quadrangle (Attachments 3A and 3B, after Morton 2003, Preliminary geologic map of the Perris 7.5' quadrangle, Riverside County, California). The map indicates that the project site is located on Holocene ("modern") and upper Pleistocene (10,000 to perhaps 100,000 year old) young alluvial valley deposits (Qyv_{sa}, shown in light yellow on Attachments 3A and 3B), which may overlie at depth, older, lower Pleistocene (approximately 1.8 million to perhaps 200,000 to 300,000 year old) very old alluvial fan deposits (Qvof_a, shown in light brown on Attachments 3A and 3B). Geotechnical reports prepared for the project (Mitchell and Trazo 2017a, 2017b) identified near surface alluvium extending to depths of three to greater than 12 feet below ground level. "At greater depths, the alluvium generally consists of stiff to very stiff silty clays and clayey silts," but the authors did not comment on the age of the sediments (*i.e.*, whether they were Holocene ["modern"] or Pleistocene in age). The age of these sediments is important in determining if they should be accorded a Low paleontological sensitivity (Holocene) or a High paleontological sensitivity (Pleistocene).

Paleontological Sensitivity: A paleontological sensitivity map generated by the Riverside County Land Information System in June 2019 (Attachment 4, after Riverside County Land Information System n.d.) ranks the entire project area as having a High paleontological sensitivity ("High B"), which is:

[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.

The category "High B" indicates that potential fossils are likely to be encountered at or below four feet of depth and may be impacted during excavation by construction activities. Alluvial valley sediments and very old alluvial fan sediments with a High potential/sensitivity ("High B") to yield nonrenewable paleontological resources (*i.e.*, fossils) are shown in amber tint on Attachment 4.

Based on the Paleontological Sensitivity Map in the Conservation Element of the City of Perris General Plan (City of Perris 2005, Exhibit CN-7), IDI Rider 2 & 4 High Cube Warehouses and PVSD Channel Improvement Project is located within Area 4, which is assigned a "low to high" paleontological sensitivity, based on the presence of the Pleistocene older valley deposits (High sensitivity) underlying young alluvium at the surface (Low sensitivity). Sites located within Area 4 require that paleontological monitoring be initiated once subsurface excavations reach five feet below the surface, with a stipulation that monitoring "levels" be reduced at the discretion of the project paleontologist, if appropriate (City of Perris 2005, Goal IV.A.4).

The project is located in an area specified by the City of Perris (2005) as requiring monitoring for paleontological resources once excavations reach a depth of five feet ("Area 4"); therefore, the PVCC Specific Plan FEIR (City of Perris 2011) requires a mitigation measure to be

implemented to minimize adverse impacts to fossils that might be present. This is included as part of MM Cult 5 in the PVCC Specific Plan (City of Perris 2011:11.0-27), stating that a city-approved professional paleontologist verify implementation of the mitigation measures identified in the approved Phase I report for the project. In addition, the measures outline necessary field and reporting procedures at the project during excavation activities, and stipulate that monitoring be restricted to areas of older alluvium that might be present below the surface.

Paleontological Resources: No previously recorded fossil localities are known from the vicinity of the project site, based on a previous paleontological literature review and a collections and records search conducted by the Geological Sciences Division of the San Bernardino County Museum (SBCM) in Redlands, California for the Stratford Ranch Project, which encompassed three-fourths of adjacent Section 5 (Scott 2005, attached). Based on this report, as well as another for a project located on very old alluvial fan sediments (Scott 2015, attached), the very old Pleistocene alluvial fan deposits (Qvof_a on Attachments 3A and 3B) that directly underlie the younger alluvial valley sediments (Qyv) have a High potential to contain significant nonrenewable paleontological resources, and are thus assigned a "High paleontological resource sensitivity" (Scott 2005, 2015; McLeod in Stewart 2016). Similar older Pleistocene alluvial fan sediments throughout the lowland (valley) areas of western Riverside County and the Inland Empire have been reported to yield significant fossils of extinct terrestrial mammals from the last Ice Age (see references in Scott 2015), such as mammoths, mastodons, giant ground sloths, dire wolves, shortfaced bears, saber-toothed cats, large and small horses, camels, and bison. However, the earlier collections and records search report for the Stratford Ranch Project (Scott 2005) did not identify any nearby fossil localities within the boundaries of that property, nor within a one-mile radius, which encompasses the IDI Rider 2 & 4 High Cube Warehouses and PVSD Channel Improvement Project.

The closest recorded fossil localities may be those reported by the SBCM (localities SBCM 5.3.151 and 5.3.153; *in* Scott 2013) from Pleistocene older alluvium near the Lakeview Hot Springs area on the southeast side of the Perris Reservoir. Fossil vertebrates collected from these localities included mammoth, extinct horse, and extinct bison. In another report, Reynolds (2004) reported fossil *Bison* from a location approximately six miles northeast of the current project at a depth of 17 feet below ground surface, suggesting that the fossil was from Pleistocene older alluvial or older alluvial fan sediments.

Another collections and records search of the Vertebrate Paleontology Section of the Natural History Museum of Los Angeles County (LACM) in Los Angeles of a property approximately one mile northwest of the IDI Rider 2 & 4 High Cube Warehouses and PVSD Channel Improvement Project (McLeod 2016) is reported not to have identified any previously recorded fossil localities on that property, nor within at least a one-mile radius. Based on the reported geologic unit in the area (Quaternary older alluvial fan sediments, Qvof on Attachments 3A and 3B), and the advice provided by Dr. McLeod, Stewart (2016) concluded that "a paleontological mitigation plan be prepared and implemented ..., which would include monitoring

of excavations with potential to disturb Pleistocene sediments, testing of sediments for microvertebrate fossils, preparation and curation of specimens collected, and preparation of a final report in accordance with the [draft] guidelines of the Society of Vertebrate Paleontology."

Recommendations: The existence of potentially fossiliferous Quaternary very old alluvial fan deposits beneath the Holocene and upper Pleistocene young alluvial valley deposits (Qyv_{sa} on Attachments 3A and 3B); the known occurrence of terrestrial vertebrate fossils at shallow depths from Quaternary older alluvial fan sediments across the Inland Empire of western Riverside County; and the High paleontological sensitivity typically assigned to Quaternary older alluvial fan sediments for yielding paleontological resources all support the recommendation that paleontological monitoring be required during mass grading and excavation activities in undisturbed Quaternary older alluvial fan sediments in order to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources.

Full-time monitoring is recommended within the potentially fossiliferous Quaternary older alluvial fan sediments, as specified by the project's position within Area 4 of Exhibit CN-7 of the Conservation Element of the City of Perris General Plan (City of Perris 2005). Further, the project paleontologist may revise the level of monitoring as subsurface conditions potentially change during the course of excavation activities. Mitigation measure MM 7-1 below implements PVCC Specific Plan FEIR mitigation measure MM Cult 5 (City of Perris 2011), as subsequently modified by the City, and is proposed as a part of the MMRP:

MM 7-1 Prior to the issuance of grading permits, the Project Applicant shall submit to and receive approval from the City, a Paleontological Resource Impact Mitigation Monitoring Program (PRIMMP). The PRIMMP shall include the provision of a qualified professional paleontologist (or his or her trained paleontological monitor representative) to be present on-site during any project-related excavations that exceed three (3) feet below the pre-grade surface. Selection of the paleontologist shall be subject to approval of the City of Perris Planning Manager and no grading activities shall occur at the site or within the off-site project improvement areas until the paleontologist has been approved by the City.

Monitoring shall be restricted to undisturbed subsurface areas of older Quaternary alluvium. 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, will signify completion of the program to mitigate impacts to paleontological resources.

When implemented with the provisions and guidelines provided in the California Environmental Quality Act, Scott (2015, attached), the City of Perris (2005), and the Society of Vertebrate Paleontology (2010), this MMRP would mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources (fossils), if present, to a level below significant. Therefore, excavation of the infiltration basins, deeper foundation pad excavations, and improvements to the PVSD Channel, which include all drilling and excavation activities associated with bridges and roadwork, below four feet deep will require monitoring for fossils. If you have any questions concerning this evaluation, please feel free to contact us at our Poway address. Thank you for the opportunity to have provided paleontological services for this project.

Sincerely,

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



Attachments: Index maps, geologic map, paleontological sensitivity map, and SBCM records search reports (2)

References:

- City of Perris. 2005. Conservation Element, City of Perris General Plan http://www.cityofperris.org/city-hall/general-plan/Conservation_Element_01-08-09.pdf.
- City of Perris. 2011. Perris Valley Commerce Center Specific Plan Final EIR. http://www.cityofperris.org/city-hall/specific-plans/PVCC/PVCC_MMRP_11-30%2011 rev.pdf.
- County of Riverside Land Information System. n.d. Map My County; Paleontological Sensitivity. https://gis.countyofriverside.us/Html5Viewer/?viewer=MMC_Public.
- McLeod, S.A. 2016. Paleontological resources for the proposed First Industrial Redlands project. Unpublished letter report prepared for AECOM, La Jolla, California by the Section of Vertebrate Paleontology, Natural History Museum of Los Angeles County, Los Angeles, California. [Not seen]
- Mitchell, G.K. and R.G. Trazo. 2017a. Geotechnical investigation, Rider 2 Proposed commercial/industrial building, NEC Redlands Avenue at Morgan Street, Perris, California. Unpublished geotechnical report prepared for IDI Gazeley, Irvine, California by Southern California Geotechnical, Inc., Yorba Linda, California (November 22, 2017).
- Mitchell, G.K. and R.G. Trazo. 2017b. Geotechnical investigation, Rider 4 Proposed commercial/industrial building, SEC Redlands Avenue at Morgan Street, Perris, California. Unpublished geotechnical report prepared for IDI Gazeley, Irvine, California by Southern California Geotechnical, Inc., Yorba Linda, California (November 30, 2017).
- Morton, D.M. 2003. Preliminary geologic map of the Perris 7.5' quadrangle, Riverside County, California: U.S. Geological Survey, Open-File Report 03-270: 1 map sheet with text, scale 1:24,000.
- Reynolds, R.E. 2004. Paleontological resource investigation, Moreno Highlands fault investigation. *In* unpublished geologic report prepared by Leighton & Associates, 2004, Preliminary fault investigation, Tentative Tract Map No. 32501, Moreno Highlands, City of Moreno Valley, Project No. 111061-1031.
- Scott, E.G. 2005. Paleontology literature and records review, Stratford Ranch project (BFSA # 04-175), Perris region, Riverside County, California. Unpublished report prepared for Brian F. Smith and Associates, Poway, California by the Division of Geological Sciences, San Bernardino County Museum, Redlands, California.
- Scott, E.G. 2013. Paleontology literature and records review, Ecos Nuevo project, Lakeview Hot Springs region, Riverside County, California. Unpublished report prepared for Brian F. Smith and Associates, Inc., Poway, California by the Division of Geological Sciences, San Bernardino County Museum, Redlands, California.

- Scott, E.G. 2015. Paleontology literature and records review, Moreno Valley Logistics Center, city of Moreno Valley, Riverside County, California. Unpublished report prepared for Brian F. Smith and Associates, Inc., Poway, California, by the Division of Geological Sciences, San Bernardino County Museum, Redlands, California.
- Stewart, J.D. 2016. Paleontological resources assessment of the Redlands project, Riverside County, California. Unpublished report prepared for First Industrial, L.P., by AECOM, La Jolla, California.
- Society of Vertebrate Paleontology. 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources; by the SVP Impact Mitigation Guidelines Revision Committee: http://vertpaleo.org/Membership/Member-Ethics/SVP_Impact_Mitigation_Guidelines.aspx.





Attachment 1 General Location Map The IDI Rider 2 & 4 High Cube Warehouses and PVSD Channel Improvement Project DeLorme (1:250,000)





Geology after Morton (2003)





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ECONOMIC DEVELOPMENT

11 January 2005

DITED by th

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Brian F. Smith & Associates attn: George L. Kennedy, Ph.D. 14010 Poway Road, Suite "A" Poway, CA 92064

PALEONTOLOGY LITERATURE AND RECORDS REVIEW, STRATFORD re: RANCH PROJECT (BFSA # 04-175), PERRIS REGION, RIVERSIDE COUNTY, **CALIFORNIA**

Dear Dr. Kennedy,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named property north of the City of Perris, Riverside County, California. The study area is located in the western portion of section 5, Township 4 South, Range 3 West, San Bernardino Base and Meridian, as seen on the Perris, California 7.5' United States Geological Survey topographic quadrangle map (1967 edition, photorevised 1973).

Previous geologic mapping (Rogers, 1965; Morton, 2004) indicates that the proposed study area is located primarily upon surface and subsurface early to middle Pleistocene alluvial fan deposits (= unit $Qvof_a$), overlain in the eastern portion of the property by a thin veneer of Holocene alluvial valley deposits (= Qyv_{sa}). The Holocene alluvium is too recently deposited to have potential to contain fossil resources, and so is assigned low paleontologic sensitivity. However, the older Pleistocene alluvial deposits have high potential to contain significant nonrenewable paleontologic resources, and so are assigned high paleontologic sensitivity. Similar older Pleistocene sediments throughout Riverside County and the Inland Empire have been reported to yield significant fossils of plants and extinct animals from the Ice Age (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999; Anderson and others, 2002). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, short-faced bears, sabre-toothed cats, large and small horses, large and small camels, and bison (Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999; Anderson and others, 2002).

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously-known paleontologic resource localities are recorded by the SBCM from within the study area, nor from within at least one mile

in any direction. MARK H. UFFER County Administrative Officer

NORMAN A. KANOLD Assistant County Administrator

Economic Development and Public Services Group

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Literature / records review, Paleontology, Brian F. Smith: Stratford Ranch, Perris

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Recommendations

The results of the literature review and the check of the RPLI at the SBCM demonstrate that excavation in conjunction with development may have high potential to adversely impact significant nonrenewable paleontologic resources present within the boundaries of the proposed Stratford Ranch development. A qualified vertebrate paleontologist must be retained to develop a program to mitigate impacts to such resources. This mitigation program should be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of Riverside and the proposed guidelines of the Society of Vertebrate Paleontology. This program should include, but not be limited to:

- 1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Based upon the results of this review, areas of concern include all previously-undisturbed sediments of fossiliferous Pleistocene older alluvium present within the boundaries of the property. Paleontologic monitors should be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced if the potentially-fossiliferous units described herein are not present, or if present are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.
- 2. Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates.
- 3. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage (e.g., SBCM). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not complete until such curation into an established museum repository has been fully completed and documented.
- 4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, will signify completion of the program to mitigate impacts to paleontologic resources.

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(3): 310-317.

- Jefferson, G.T., 1991. A catalogue of late Quaternary vertebrates from California: Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, No. 7.
- Morton, D.M., 2004. Preliminary digital geologic map of the Santa Ana 30' x 60' quadrangle, southern California, version 2.0. United States Geological Survey Open-File Report 99-172. Digital preparation by K.R. Bovard and R.M. Alvarez. Prepared by the Southern California Areal Mapping Project (SCAMP), in cooperation with the California Geological Survey
- Reynolds, S.F.B. and R.L. Reynolds, 1991. The Pleistocene beneath our feet: near-surface Pleistocene fossils in inland southern California basins, *in* Inland Southern California: the last 70 million years, M.O. Woodburne, S.F.B. Reynolds, and D.P. Whistler, eds. Redlands, San Bernardino County Museum Special Publication 38(3&4), p. 41-43.
- Rogers, T.H., 1965. Geologic map of California, Santa Ana sheet, scale 1:250,000. California Division of Mines and Geology Regional Geologic Map Series.
- Scott, E., 1997. A review of *Equus conversidens* in southern California, with a report on a second, previously-unrecognized species of Pleistocene small horse from the Mojave Desert. Journal of Vertebrate Paleontology 17(3): 75-A.
- Scott, E. and K. Springer, 2003. CEQA and fossil preservation in southern California. The Environmental Monitor, Fall 2003, p. 4-10, 17.
- 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 (3): 47A.
- Springer, K.B., E. Scott, L.K. Murray and W.G. Spaulding, 1998. Partial skeleton of a large individual of *Mammut americanum* from the Domenigoni Valley, Riverside County, California. Journal of Vertebrate Paleontology 18(3): 78-A.
- Springer, K.B., E. Scott, J.C. Sagebiel and K.M. Scott, 1999. A late Pleistocene lake edge vertebrate assemblage from the Diamond Valley, Riverside County, California. Journal of Vertebrate Paleontology 19(3): 77-A.
- Woodburne, M.O., 1991. The Cajon Valley, *in* Inland Southern California: the last 70 million years,
 M.O. Woodburne, S.F.B. Reynolds, and D.P. Whistler, eds. Redlands, San Bernardino
 County Museum Special Publication 38(3&4), p. 41-43.

Please do not hesitate to contact us with any further questions you may have.

Sincere

Eric Scott, Curator of Paleontology Division of Geological Sciences San Bernardino County Museum 2024 Orange Tree Lane, Redlands, California 92374 | Phone: 909.798.8608



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Leonard X. Hernandez Interim Museum Director

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12 March 2015

Brian F. Smith and Associates attn: George L. Kennedy, Ph.D., Senior Paleontologist 14010 Poway Road, Suite A Poway, CA 92064

re: PALEONTOLOGY LITERATURE AND RECORDS REVIEW, MORENO VALLEY LOGISTICS CENTER, CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA

Dear Dr. Kennedy,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named project in the City of Moreno Valley, Riverside County, California. Specifically, the proposed study area is located in the southwestern quadrant of section 30, Township 3 South, Range 3 West, San Bernardino Base and Meridian, as seen on the Perris, California and the Sunnymead, California 7.5' United States Geological Survey topographic quadrangle maps (1967 editions, photorevised 1973 and 1980, respectively).

Previous mapping of the proposed property (Rogers, 1965; Morton and Matti, 2001; Morton, 2003) indicates that the study area is situated entirely upon surface exposures of early Pleistocene alluvial fan deposits (= unit $Qvof_a$). These Pleistocene fan deposits may have high paleontologic sensitivity, depending upon their lithology. Pleistocene alluvium elsewhere throughout Riverside County and the Inland Empire has repeatedly been reported to yield significant fossils of extinct animals from the Ice Age (Jefferson, 1991; Reynolds, 1991; Anderson and others, 2002; Scott and Cox, 2008; Springer and others, 2009, 2010; Scott, 2010). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, sabre-toothed cats, large and small horses, large and small camels, and bison (Jefferson, 1991; Reynolds, 1991; Scott and Cox, 2008; Springer and others, 2009, 2010; Scott, 2010), as well as plant macro- and microfossils (Anderson and others, 2002). If not previously disturbed by development, and depending upon the lithology exhibited, these sediments have high potential to contain significant nonrenewable paleontologic resources.

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously-recorded fossil resource

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JANICE RUTHERFORD Second District JAMES RAMOS Chairman, Third District CURT HAGMAN Fourth District JOSIE GONZALES Fifth District localities from Pleistocene older alluvium are present within the boundaries of the proposed development property, nor from at least within one mile in any direction.

Recommendations

The results of the literature review and the search of the RPLI at the SBCM demonstrate that the proposed study area is situated upon Pleistocene older alluvial deposits that, if not previously disturbed by development and depending upon their lithology, have high potential to contain paleontologic resources. Excavation in this older alluvium therefore has high potential to impact paleontologic resources. A qualified vertebrate paleontologist must develop a program to mitigate impacts to nonrenewable paleontologic resources. This mitigation program must be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of Riverside. This program should include, but not be limited to:

- 1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Areas requiring monitoring include all previously-undisturbed Pleistocene older alluvial sediments present, at the surface or at depth, within the boundaries of the property. Paleontologic monitors should be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced or eliminated if the potentially-fossiliferous units described herein are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.
- 2. Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential in order to fully mitigate adverse impacts to the resources (Scott and others, 2004).
- 3. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage. These procedures are also essential steps in effective paleontologic mitigation (Scott and others, 2004) and CEQA compliance (Scott and Springer, 2003). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not complete until such curation into an established, accredited museum repository has been fully completed and documented.
- 4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum

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repository, would signify completion of the program to mitigate impacts to paleontologic resources.

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(3): 310-317.
- Jefferson, G.T., 1991. A catalogue of late Quaternary vertebrates from California: Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, No. 7.
- Morton, D.M., 2003. Preliminary geologic map of the Perris 7.5' quadrangle, Riverside County, California, version 1.0. United States Geological Survey Open-File Report 03-270. Digital preparation by K.R. Bovard and R.M. Alvarez.
- Morton, D.M. and J.C. Matti, 2001. Geologic map of the Sunnymead 7.5' quadrangle, Riverside County, California, version 1.0. United States Geological Survey Open-File Report 01-450. Digital preparation by V.M. Diep and U. Edwards-Howells.
- Reynolds, S.F.B. and R.L. Reynolds, 1991. The Pleistocene beneath our feet: near-surface Pleistocene fossils in inland southern California basins. *In* M.O. Woodburne, S.F.B. Reynolds, and D.P. Whistler (eds.), Inland Southern California: the last 70 million years. Redlands: San Bernardino County Museum Special Publication 38(3&4): 41-43.
- Rogers, T.H., 1965. Geologic map of California, Santa Ana sheet. California Division of Mines and Geology. Scale 1:250,000.
- Scott, E., 2010. Extinctions, scenarios, and assumptions: changes in latest Pleistocene large herbivore abundance and distribution in western North America. *In* E. Scott and G. McDonald (eds.), Faunal dynamics and extinction in the Quaternary: Papers honoring Ernest L. Lundelius, Jr. Quaternary International 217: 225-239.
- Scott, E. and S.M. Cox, 2008. Late Pleistocene distribution of *Bison* (Mammalia; Artiodactyla) in the Mojave Desert of southern California and Nevada. *In* X Wang and L.G. Barnes (eds.), Geology and Vertebrate Paleontology of Western and Southern North America, Contributions in Honor of David P. Whistler. Natural History Museum of Los Angeles County Science Series No. 41, p. 359 382.
- Scott, E. and K. Springer, 2003. CEQA and fossil preservation in southern California. The Environmental Monitor, Fall 2003, p. 4-10, 17.
- Scott, E., K. Springer and J.C. Sagebiel, 2004. Vertebrate paleontology in the Mojave Desert: the continuing importance of "follow-through" in preserving paleontologic resources. *In* M.W. Allen and J. Reed (eds.) The human journey and ancient life in California's deserts: Proceedings from the 2001 Millennium Conference. Ridgecrest: Maturango Museum Publication No. 15, p. 65-70.
- Springer, K., E. Scott, J.C. Sagebiel, and L.K. Murray, 2009. The Diamond Valley Lake local fauna: late Pleistocene vertebrates from inland southern California. *In* L.B. Albright III (ed.), Papers on geology, vertebrate paleontology, and biostratigraphy in honor of Michael O. Woodburne. Museum of Northern Arizona Bulletin 65:217-235.
- Springer, K., E. Scott, J.C. Sagebiel, and L.K. Murray, 2010. Late Pleistocene large mammal faunal dynamics from inland southern California: the Diamond Valley Lake local fauna. *In* E. Scott and G. McDonald (eds.), Faunal dynamics and extinction in the Quaternary: papers honoring Ernest L. Lundelius, Jr. Quaternary International 217: 256-265.

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Please do not hesitate to contact us with any further questions you may have.

Sincerely,

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