


Memorandum

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To: DAVID GOULD
Environmental Planner
Southern San Joaquin Management Branch III

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Subject: **PALEONTOLOGICAL IDENTIFICATION REPORT - PA&ED UPDATE**
Stratford Kings River Bridge Replacement Project
Kings County

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016 and executed by the Federal Highway Administration (FHWA) and Caltrans.

State and Federally funded transportation projects are required to conform with the following regulations concerning the protection and preservation of paleontological resources: Antiquities Act of 1906 (16 United States Code [USC] 431-433), Archaeological and Paleontological Salvage (23 USC 305), Federal-Aid Highway Act of 1935 (20 USC 78), National Environmental Policy Act of 1969 (NEPA; 42 USC 4321), and California Environmental Quality Act (CEQA; Chapter 1, Section 21002).

The findings in this *Memorandum* pertain to the identification and categorization of paleontological resources relative to scientific significance. Impacts to such resources on state highway projects are required to be either avoided, minimized, or mitigated. The evaluation and determination of project impact presented below are based on professional geologic and paleontological experience along with information obtained from the following sources:

- Geologic maps;
- California State University, Fresno, Department of Geology Paleontological Sensitivity Mapping Project database;
- *Caltrans Standard Environmental Reference, Chapter 8 - Paleontology*; and
- Geologic/Paleontological literature and databases.

Project Description Update/Purpose/Need

The project would be replacing the Kings River Bridge (No. 45-0007) on State Route (SR) 41 with an incremental precast slab bridge. The alignment and centerline of the new bridge will match the existing bridge. The number and size of the supporting columns for the replacement bridge will be determined during the detailed design phase.

A 50-foot wide temporary wood trestle bridge would be built on the east side of the existing bridge for dismantling and installing the new bridge. The trestle bridge would be erected from the northeast bank of the Kings River and stop just before the southeast bank.

During construction, SR 41 will be temporarily closed, and traffic would be redirected onto an estimated 32-mile long detour. Traffic heading south from Fresno would turn onto SR 198 heading west, then south onto Avenal-Cutoff Road. From Avenal-Cutoff Road traffic would head west onto State Route 269, then south on Interstate 5 (I 5), then back onto SR 41 at Kettleman City. Traffic heading north from Paso Robles would take the reverse order to get back onto SR 41. Temporary traffic signals will be required at the intersection of Avenal-cutoff Road, State Route 269, and I-5. Work will include installing temporarily wood poles and trenching. All work on the detour will be within Caltrans right-of-way (ROW). Construction including the detour, is estimated to take 200 working days to complete the project.

The purpose of this project is to address superstructure, substructure, and seismic deficiencies of this bridge to ensure the safety and reliability of SR 41.

The existing Kings River Bridge (No. 45-0007) was built in 1942 and widened in 1987. The bridge is exhibiting continued deterioration and corrosion of the columns supporting the bridge. The underside of the widened portions of the bridge also show's signs of cracks about five feet long and spaced as close as three feet on center. Further studies found that a bridge replacement was required to address the structural and seismic deficiencies. The columns will continue to corrode and deteriorate to the point where it will no longer be able to support the bridge if the bridge is not replaced.

Geological Evaluation of the Project Areas

The proposed project is located within the Great Valley geomorphic province (California Geological Survey, Note 36, 2002).

Sediments underlying the post-mile (PM) segment consist of undifferentiated quaternary alluvial fan and basin deposits of the Modesto Formation (Great Valley Sequence) and quaternary lake deposits associated with the former Tulare Lake. In accordance with Geological Survey Bulletin 1470 (1981), the Modesto Formation is composed of mainstream arkosic sediments and associated deposits of local derivation laid down during the last major series of aggradational events in the eastern San Joaquin Valley. Gravel, sand, and silt were deposited as a series of coalescing alluvial fans extending continuously from the Kern River drainage on the south to the Sacramento River tributaries in the north.

Paleontological Sensitivity, California State University, Fresno

The California State University, Fresno (CSUF) Paleontological Sensitivity Mapping Project database (2000) lists the paleontological sensitivity of the PM segment as “low”. The database identifies the low sensitivity sediments as undifferentiated quaternary alluvium (Modesto Formation and quaternary lake deposits).

Although the database categorizes the Modesto Formation as a low sensitivity resource, hundreds of scientifically significant Pleistocene vertebrate fossils have been recovered at localities attributed to this formation since the database was developed in 2000. These localities include the State Route 99 Plainsburg Road/Arboleda Drive Freeway Project in Merced County (Haasl et al. 2017; Gust et al. 2012; Haasl et al. 2015). Consequently, the paleontological sensitivity of the Modesto formation is now categorized as high.

Paleontological Categories, Caltrans SER

The high sensitivity of the Modesto Formation is equivalent to the “*high potential*” definition in the tripartite scale used in the *Caltrans Standard Environmental Reference - Chapter 8, Paleontology* (SER, Chapter 8).

High potential includes rock units which, based on previous studies, contain or are likely to contain significant vertebrate, significant invertebrate, or significant plant fossils. These units include, but are not limited to, sedimentary formations that contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils.

Areas with a high potential for containing significant paleontological resources require monitoring and mitigation; however, existing superstructure and substructure elements to be replaced for this project are underlain by soils already excavated or greatly disturbed during construction of the existing bridge. Previously excavated soil is considered engineered fill.

Paleontological Specimen Search, University of California Museum of Paleontology

A search of the University of California Museum of Paleontology (UCMP) online database, did not present fossil finds of the Modesto Formation within Kings County.

Determination of Project Impacts to Paleontological Resources

A high potential paleontological resource underlies the PM segment of the project. The high potential sediments consist of the Modesto Formation. Excavation in the project area will impact the resource(s); however, the extent and intensity of the proposed excavations is expected to be limited to shallow soils and/or localized areas, as soil underlying the existing superstructure and substructure elements to be replaced were previously excavated or greatly disturbed during construction of the existing bridge. As a result, scientifically significant fossils are unlikely to be encountered; therefore, no Standard Special Provisions (SSPs) are required to be addressed for this project at this time.

Recommendation

Paleontological mitigation is not recommended at this time. This *Paleontological Identification Report* (PIR) shall be updated/reevaluated if there are additional changes to the project description.

If unanticipated fossil discovery were to occur during construction, Specification 14-7.03 of the 2018 Standard Specifications identifies the procedures required to protect the resource. Add the potential unanticipated discovery of fossils during construction to the project Risk Register as impacts to time, schedule, and cost. Given the current project description, the risk should be categorized as low.

In accordance with the *Workplan Standards Guide for the Delivery of Capital Projects*, the following resources should be programmed for future *PIR Updates, Environmental Re-evaluation, and Construction Support*:

Unit 1412:

Phase/Task	WBS	Hours
PIR Updates (if needed)	165	18
PS&E - Environmental Re-evaluation	255	12
Construction Support	280	12

If you need further information, please contact Kai Pavel at (559) 445-5781.

References

California Department of Transportation. (2014). Caltrans Workplan Standards Guide for the Delivery of Capital Projects. Retrieved from https://onramp.dot.ca.gov/hq/pm/dpmwp/content/WPS/Documents/WSG_v11.0_2014.pdf

California Department of Transportation. (2017). Standard Environmental Reference, Chapter 8 - Paleontology. Retrieved from <http://www.dot.ca.gov/ser/vol1/sec3/physical/Ch08Paleo/chap08paleo.htm>

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Haasl, D.M., Wagner, H.M., and Fisk, L.H., 2015, Paleontological Mitigation Report for the State Route 99 Arboleda Drive Freeway Project, Merced County, California; 10-MER-99 (PM 4.6-10.5); EA: 10-415704; Contract: 06A1787 Task Order #4; prepared for Caltrans D-6 Environmental by: ICF Jones & Stokes, Inc.

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