9 May 2017

Mr. Chyiluu Chi
Hong Guan, LLC
14785 Jeffrey Road #201
Irvine, California 92618

Subject: Paleontological resource assessment for the Lakeview Manor condominiums project, city of Lake Elsinore, Riverside County, California (APN 379-230-001)

Dear Mr. Chi:

Introduction and Location: A paleontological resource assessment has been completed for the 7.50-acre (gross) property for the pending Lakeview Manor condominiums project located near the north end of Lake Elsinore. This assessment was conducted in order to evaluate the need to require a paleontological Mitigation Monitoring and Reporting Program (MMRP) for grading and earthmoving activities during the preconstruction phase of the project. The project site (Assessor's Parcel Number [APN] 379-230-001) is located near the north end of Lake Elsinore and fronts on Lakeshore Drive at its intersection with Gunnerson Street in the city of Lake Elsinore, Riverside County, southern California (Attachments 1 and 2). The project calls for the construction of 11 two-story, eight- and 12-unit condominium structures and a stand-alone clubhouse (all of slab-on-grade construction), as well as associated infrastructure (swimming pool and tennis courts) and parking areas. On the U. S. Geological Survey 7.5-minute, 1:24,000-scale Lake Elsinore, California topographic quadrangle map, the subject property lies in the central part of the southern quarter of projected Section 35, Township 5 South, Range 5 West, San Bernardino Base and Meridian (Attachment 2).

Geology: Geologically, on the l:24,000-scale geologic map of the Lake Elsinore 7.5-minute quadrangle (Attachment 3, after D. M. Morton and F. H. Weber, Jr., 2003), the project is located near the eastern margin of the Elsinore fault zone. Surficial sediments mapped across the property consist of late Quaternary (Holocene to late Pleistocene) fluvial "young alluvial valley deposits" (Qyv_a, shown in pale amber on Attachment 3). These sediments are composed of unconsolidated sand, silt, and clay-bearing alluvium (Morton and Weber, 2003) and may interfinger with Holocene Lake Elsinore lacustrine sediments in the subsurface. The hills to the northeast of Lakeshore Drive are composed of the Paleocene Silverado Formation (Tsi, shown in brown on Attachment 3) and are capped by exposures thought to represent the middle Pleistocene (Irvingtonian) sandstone member of the Pauba Formation (Qpf? on Attachment 3).

Collections and Records Search: A site-specific museum collections and records search was not solicited for this project. However, a review of published literature accounts and knowledge of existing museum collections derived from the greater Elsinore Valley area did not reveal any previously recorded fossil localities from the proposed Lakeview Manor project site. However, outcrops of the sandstone member of the Pauba Formation, which are exposed nearby across Lakeshore Drive (Attachment 3), have yielded a diverse assemblage of middle Pleistocene (Irvingtonian) terrestrial mammal remains from more than 100 localities in the Wildomar(?), Murrieta, Murrieta Hot Springs, and Temecula areas (Pajak, 1997; Pajak *et al*., 1996; Jefferson, 1991; and unpublished collections and records searches by the Division of Geological Sciences at the San Bernardino County Museum in Redlands, California). None of these localities were from young Quaternary sediments (Qyv_a on Attachment 3), such as those mapped across the Lakeview Manor property.

The Paleocene Silverado Formation (Tsi, shown in olive-brown on Attachment 3), which crops out to the north along the Elsinore fault zone and in the adjacent Santa Ana Mountains, is both marine and nonmarine in origin. The upper part of the formation is known to yield abundant marine molluscan fossils (Morton and Weber, 2003). A previous collections and records search by the Department of Earth Sciences at the University of California at Riverside (UCR) (M. Kooser, 2003; copy attached) for a project in Temescal Canyon north of Lake Elsinore revealed only three fossil localities in Paleocene sediments now assigned to the Silverado Formation in the northern Santa Ana Mountains and near vicinity. Of these, only one locality (UCR loc. 4147) is cited from Temescal Canyon, although it lacks adequate detailed information to locate it precisely. Fossils from UCR loc. 4147 included numerous fossil angiosperm leaves. Several outcrops of the Silverado Formation are shown along Temescal Canyon on the geologic maps of the area. An unpublished manuscript by C. E. Weaver (1959), who specialized in Paleocene fossils, is on file at UCR, but does not include any fossil localities from the vicinity of Lake Elsinore.

Paleontological Sensitivity: A paleontological sensitivity map and report generated by the Riverside County Land Information System in May of 2017 (Attachment 4) is not in complete agreement with the geologic mapping (*i.e*., location of the geologic contacts) as shown on Attachment 3, probably due to scaling issues during enlargement to a scale of 1:24,000, as shown on the geologic map. However, it is clear that the young Quaternary (Holocene and late Pleistocene) alluvial valley sediments on the north end of Lake Elsinore (Qyv_a on Attachment 3) are assigned a Low paleontological sensitivity (shown in light green on Attachment 4) and the Paleocene Silverado Formation and the Pleistocene Pauba Formation sediments are assigned a High (High A) paleontological sensitivity (shown in dark pink on Attachment 4). We regard the geologic contacts (as shown on Attachment 3) to be a more precise representation of the boundaries between those areas with a High paleontological sensitivity and those areas assigned a Low paleontological sensitivity (Attachment 4).

Recommendations: Construction of the Lakeview Manor project (APN 379-230-001) will mainly involve minimal grading for slab-on-grade construction with associated parking areas. Because the only surficial geologic unit mapped across the project site consists of young Quaternary (Holocene and late Pleistocene) alluvial valley deposits (Qyv_a on Attachment 3, after Morton and Weber [2003]), which are only assigned a Low paleontological sensitivity

(Attachment 4), we recommend that any requirement for instituting a paleontological MMRP be waived for this project and not be a further requirement prior to issuance of a grading permit for development of the property.

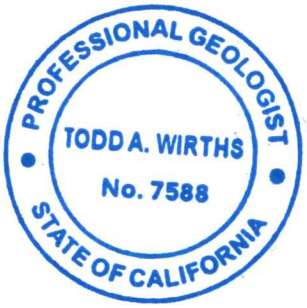
If there are any questions concerning this evaluation, please feel free to contact us at our Poway office. Thank you for the opportunity to have provided paleontological services for this project.

Sincerely,

George L. Kennedy, Ph.D.
Senior Paleontologist

Todd A. Wirths, M.S.
California Professional Geologist No. 7588

Attachments: Index maps, geologic map, paleontological sensitivity map, records search report



References:

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: i-v + 1-129.

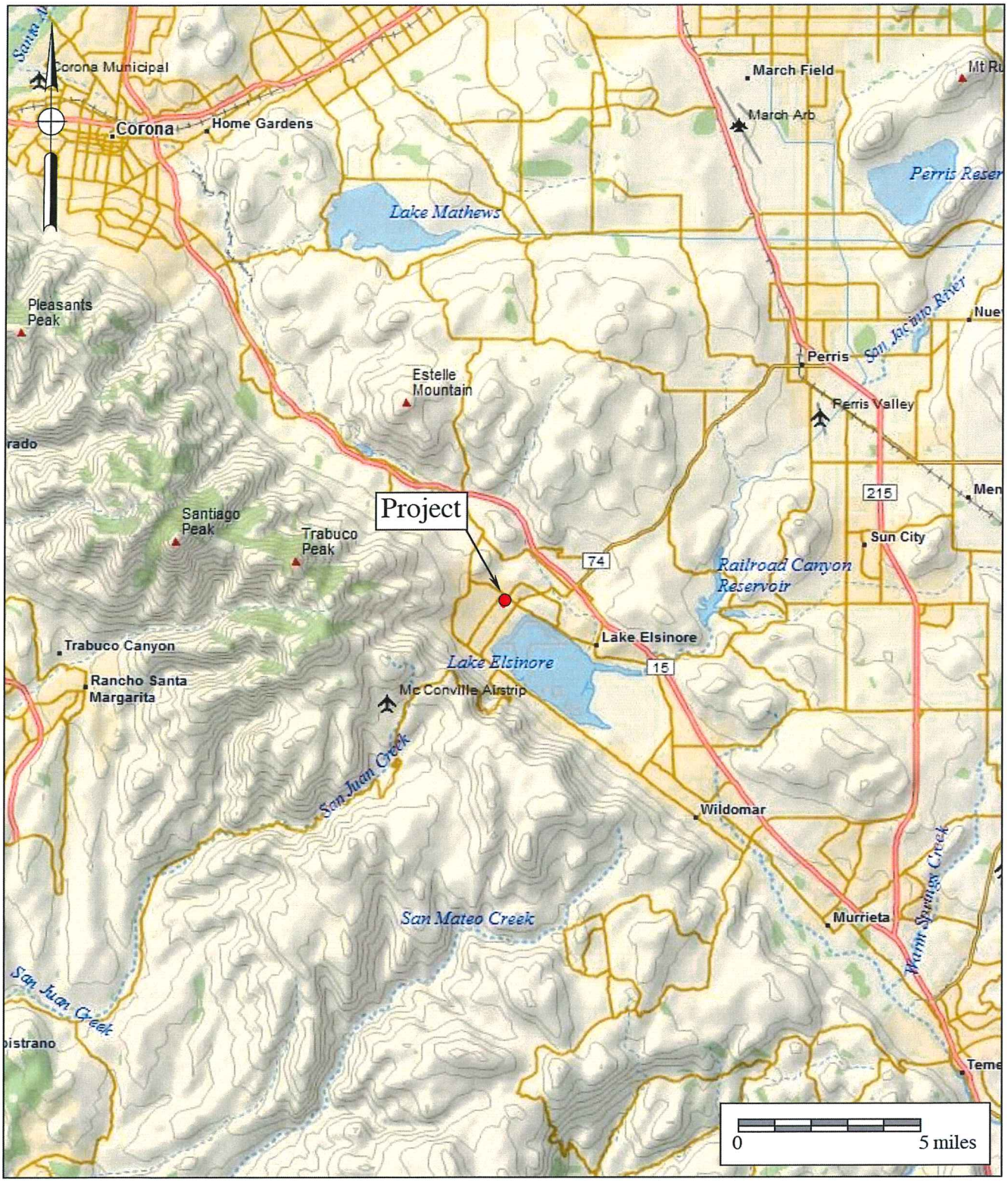
Kooser, Marilyn. 2003. Fossil locality search for the Saddleback Estates Survey, BFSA #03-41. Unpublished letter report prepared for Brian F. Smith and Associates, San Diego, by the Geology Museum, Department of Earth Sciences, University of California, Riverside.

Morton, D. M. 2004. Preliminary digital geologic map of the Santa Ana 30' x 60' quadrangle, southern California, Version 2.0. California Geological Survey, Open-File Report 99-172: sheets 1-2 (scale 1:100,000)

Morton, D. M., and Weber, F. H., Jr. 2003. Preliminary geologic map of the Elsinore 7.5' quadrangle, Riverside County, California. U. S. Geological Survey, Open-File Report 03-281: 1 map sheet (scale 1:24,000) with explanatory text.

Pajak, A. F., III. 1997. The upper "unnamed sandstone" and the Irvingtonian General Kearney Local Fauna, Riverside County, California. Unpublished Master of Science thesis in Quaternary Studies, Northern Arizona University, Flagstaff, Arizona. Pp. i-x + 1-163, figs. 1-23, tables 1-4.

Pajak, A. F., III, Scott, E. G., and Bell, C. J. 1996. A review of the biostratigraphy of Pliocene and Pleistocene sediments in the Elsinore fault zone, Riverside County, California. PaleoBios, 17(2-4): 28-49.

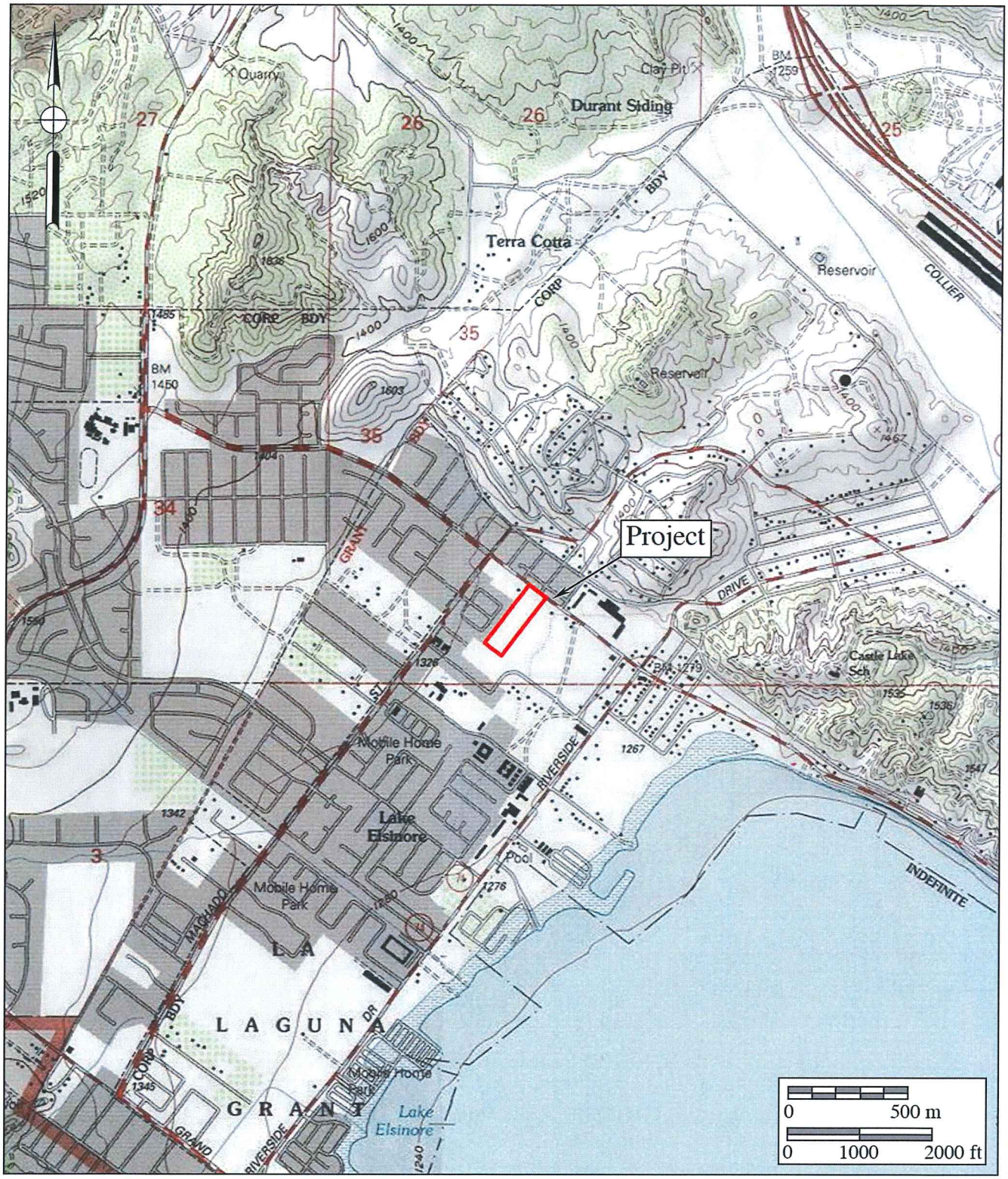


Attachment 1

General Location Map

The Lakeview Manor Project

DeLorme (1:250,000)

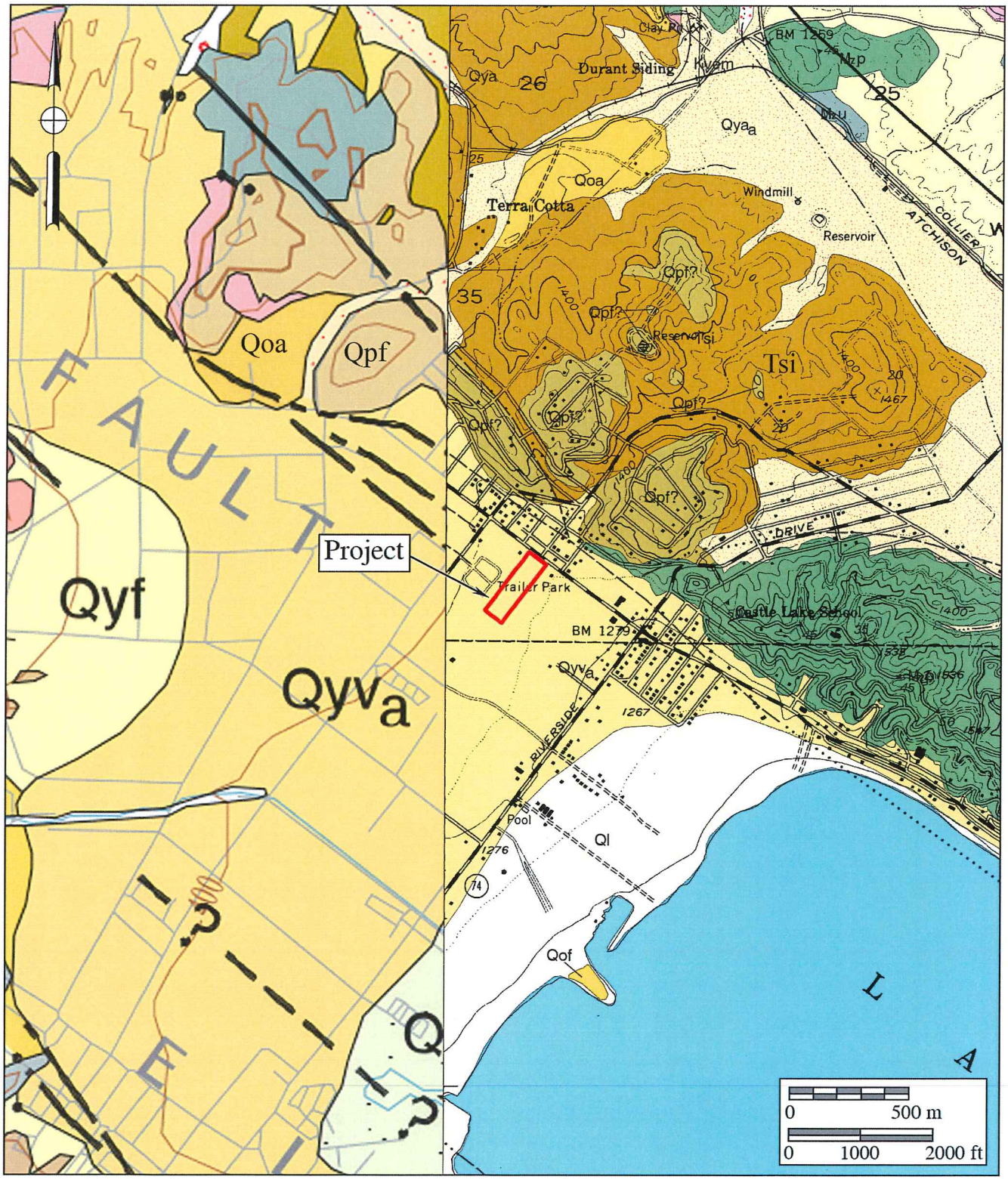


Attachment 2

Project Location Map

The Lakeview Manor Project

USGS *Alberhill* and *Lake Elsinore* Quadrangles (7.5-minute series)

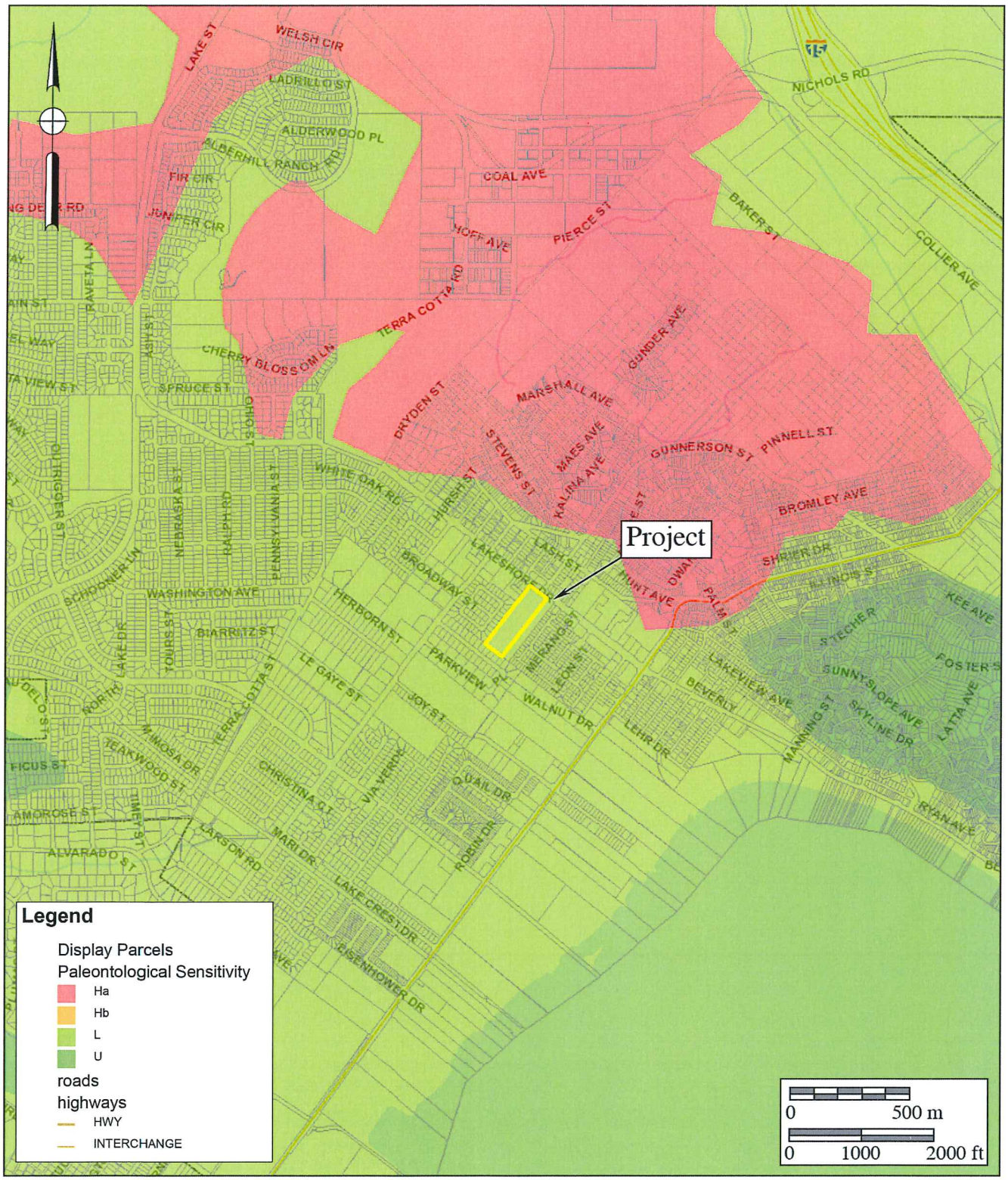


Attachment 3

Geologic Map

The Lakeview Manor Project

Geology after Morton (2004) and Morton and Weber (2003)



Attachment 4

Paleontological Sensitivity Map

The Lakeview Manor Project

UNIVERSITY OF CALIFORNIA, RIVERSIDE

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Dr. George Kennedy
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3 June 2003

Dear Dr. Kennedy,

RE: Fossil locality search for the Saddleback Estates Survey, BFSA#03-41.

A search of our invertebrate and vertebrate fossil locality files has turned up three fossil sites from Paleocene beds of the Santa Ana Mountains. All three sites were collected long ago and documentation of the locations is minimal. "G.W." probably refers to Gordon White, who collected for Shell Oil in the early 1930s. Almost any Paleocene formation was called "Martinez" at the time these were collected.

UCR 1070 was collected by Shell Oil and merely says "Martinez Fm., G.W. 12, North end Santa Ana Mtns." The specimens include one largely complete *Ostrea* and two unidentified, smaller pelecypod valves.

UCR 1085 was also collected by Shell Oil and says "Martinez Fm., G.W. 15, N.E. slope of Santa Ana Mts." That collection consists of three fragments and two more complete valves identified as "*Pedalion* n. sp. A."

UCR 4147 was collected by Ruth Kirkby and is described as "Martinez, Elsinore Quad., Hillside above road working storage yard on main road east of Elsinore, Temescal Canyon, Moulton Ranch (?)". That collection consists of numerous angiosperm leaves, all unidentified.

A bill charging $75 for this search will be sent under separate cover.

Yours truly,

Dr. Marilyn Kooser
Museum Scientist