PALEONTOLOGICAL RESOURCES ASSESSMENT REPORT

SKYLINE VILLAGE COMMERCIAL CENTER

Assessor's Parcel Nos. 275-050-014 and 275-080-041
City of Corona, Riverside County, California

For Submittal to:

City of Corona
Community Development Department, Planning Division
400 South Vicentia Avenue, Suite 120
Corona, CA 92880

Prepared for:

GF Investments
28565 Old Town Front Street, Suite 311
Temecula, CA 92590

Prepared by:

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Michael Hogan, Principal Investigator
Bai "Tom" Tang, Principal Investigator

September 26, 2019

CRM TECH Project No. 3512P
Approximately 17 acres
Corona South, Calif., 7.5' quadrangle
Sections 3 and 10; T4S R7W, San Bernardino Baseline and Meridian

EXECUTIVE SUMMARY

Between June and September 2019, at the request of GF Investments, CRM TECH performed a paleontological resource assessment on approximately 17 acres of undeveloped land in the City of Corona, Riverside County, California. The subject property of the study Assessor's Parcel Nos. 275-050-014 and 275-080-041, is located to the southwest of the intersection of Foothill Parkway and Chase Drive and within Sections 3 and 10 of Township 4 South Range 7 West, San Bernardino Baseline and Meridian.

The study is part of the environmental review process for the proposed Skyline Village Commercial Center project, which entails the construction of retail, restaurant, and office space as well as a gas station on the property, along with other associated improvements. The City of Corona, as the lead agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA). The purpose of the study is to provide the City with the necessary information and analysis to determine whether the proposed project would potentially disrupt or adversely affect any significant, nonrenewable paleontological resources, as mandated by CEQA.

In order to identify any paleontological resource localities that may exist in or near the project area and to assess the possibility for such resources to be encountered in future excavation and construction activities, CRM TECH initiated a records search at the appropriate repository, reviewed pertinent literature, and carried out a systematic field survey in accordance with the guidelines of the Society of Vertebrate Paleontology.

The results of these research procedures indicate that the proposed project's potential to impact significant paleontological resources is low in the surface sediments of younger Quarternary alluvium in the northern portion and the southeastern corner of the property but high in the exposures of marine late-Cretaceous Ladd Formation and Paleocene Silverado Formation elsewhere and in the older Quaternary sediments underlying the younger Quarternary alluvium. The current surface soils in the project area, however, have been extensively disturbed over the past 17 years and essentially constitute artificial fill.

In order to prevent project impacts on significant, nonrenewable paleontological resources or to reduce such impacts to a level less than significant, CRM TECH recommends that a mitigation program be developed and implemented during any earth-moving operations reaching beyond the previously disturbed surface soils. As the primary component of the mitigation program, all earth-moving operations at or below the depth of five feet, or at shallower depths if the paleontologically sensitive soils are encountered, should be monitored by a qualified paleontological monitor.

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INTRODUCTION

Between June and September 2019, at the request of GF Investments, CRM TECH performed a paleontological resource assessment on approximately 17 acres of vacant land in the City of Corona, Riverside County, California (Fig. 1). The subject property of the study Assessor's Parcel Nos. 275-050-014 and 275-080-041, is located to the southwest of the intersection of Foothill Parkway and Chase Drive and within Sections 3 and 10 of Township 4 South Range 7 West, San Bernardino Baseline and Meridian(Figs. 2, 3).

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In order to identify any paleontological resource localities that may exist in or near the project area and to assess the possibility for such resources to be encountered in future excavation and construction activities, CRM TECH initiated a records search at the appropriate repository, reviewed pertinent literature, and carried out a systematic field survey in accordance with the guidelines of the Society of Vertebrate Paleontology. The following report is a complete account of the methods, results, and final conclusion of this study. Personnel who participated in the study are named in the appropriate sections below, and their qualifications are provided in Appendix 1.

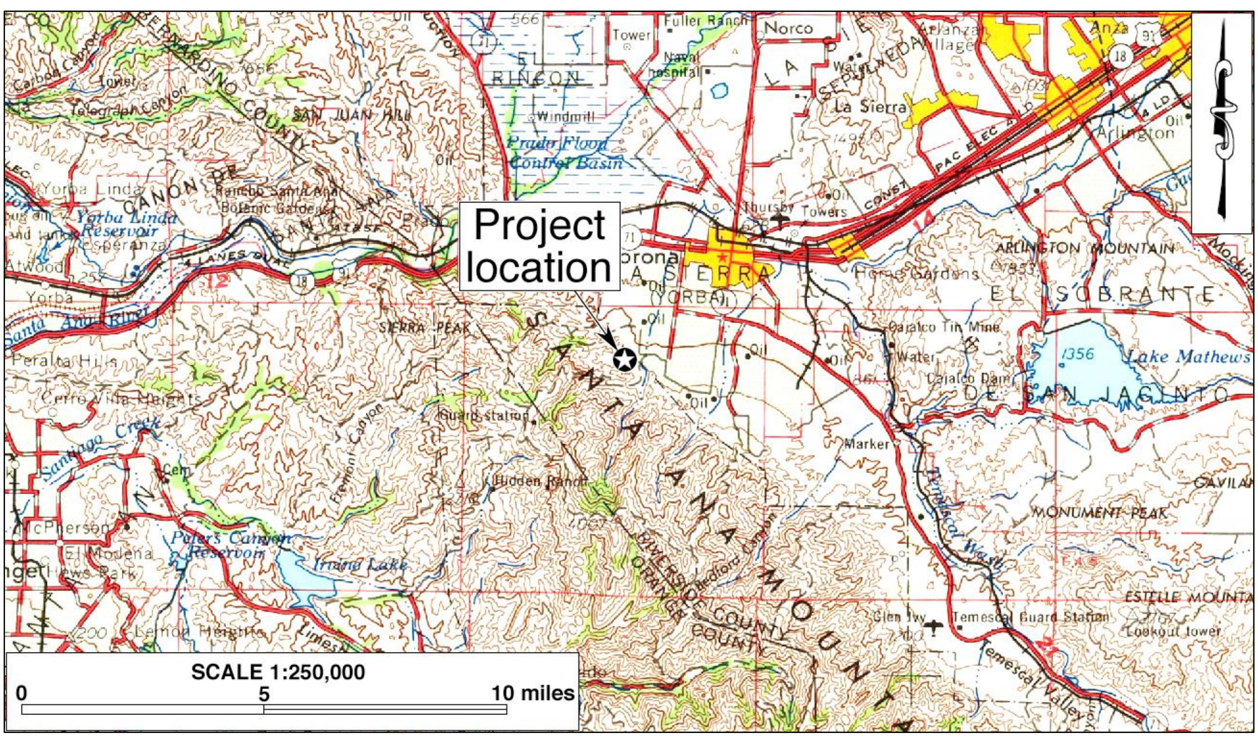

Figure 1. Project vicinity. (Based on USGS Santa Ana, Calif., 30'x60' quadrangle [USGS 1979])

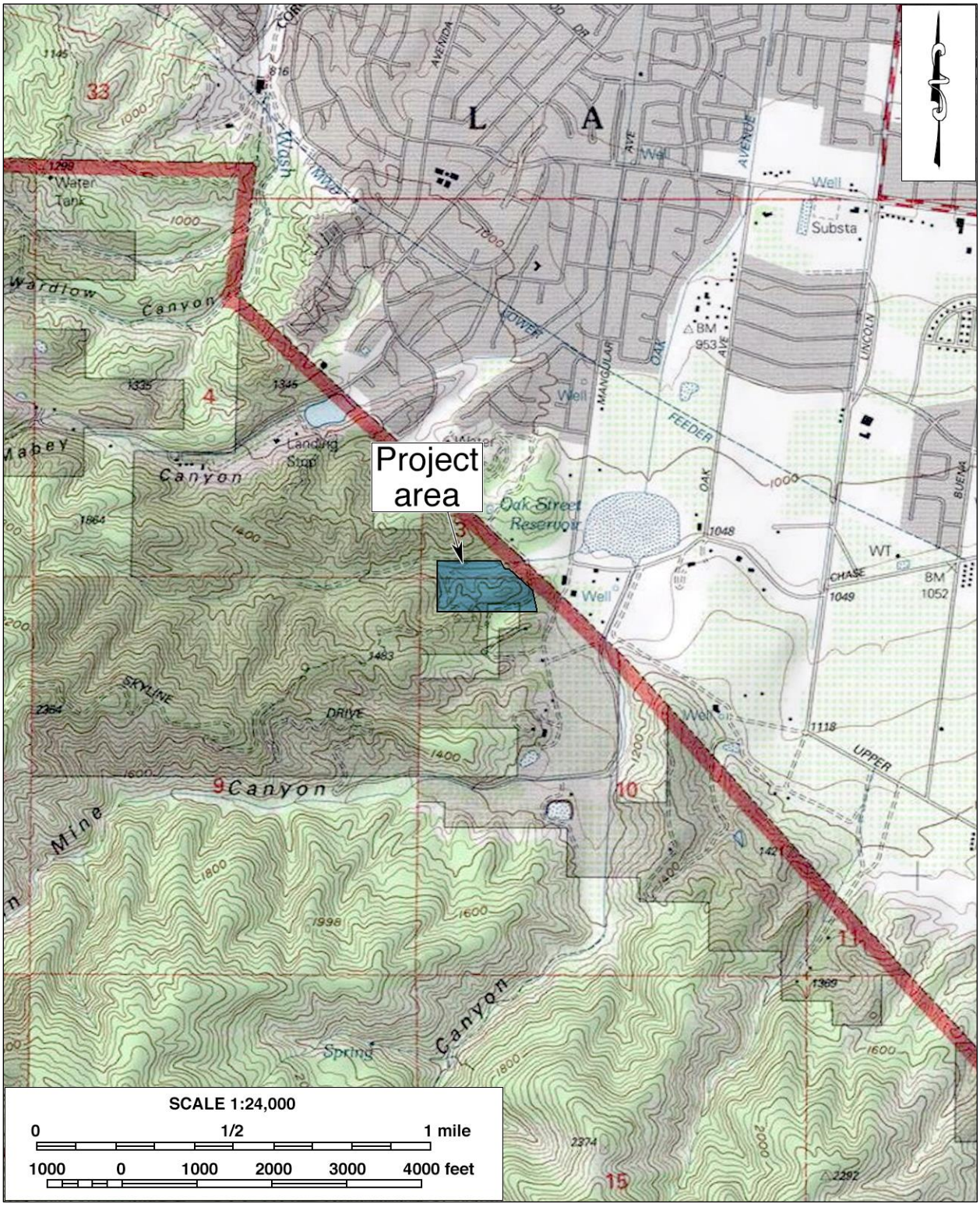

Figure 2. Project area. (Based on the USGS Corona South, Calif., 7.5' quadrangle)

Figure 3. Aerial image of the project area.

PALEONTOLOGICAL RESOURCES

DEFINITION

Paleontological resources represent the remains of prehistoric life, exclusive of any human remains, and include the localities where fossils were collected as well as the sedimentary rock formations in which they were found. The defining character of fossils or fossil deposits is their geologic age, which is typically regarded as older than approximately 12,000 years, the generally accepted temporal boundary marking the end of the last late Pleistocene (circa 2.6 million to 12,000 years B.P.) glaciation and the beginning of the current Holocene epoch (circa 12,000 years B.P. to the present).

Common fossil remains include marine shells; the bones and teeth of fish, amphibians, reptiles, and mammals; leaf assemblages; and petrified wood. Fossil traces, another type of paleontological resource, include internal and external molds (impressions) and casts created by these organisms. These items can serve as important guides to the age of the rocks and sediments in which they are contained, and may prove useful in determining the temporal relationships between rock deposits from one area and those from another as well as the timing of geologic events. They can also provide information regarding evolutionary relationships, development trends, and environmental conditions.

Fossil resources generally occur only in areas of sedimentary rock (e.g., sandstone, siltstone, mudstone, claystone, or shale). Because of the infrequency of fossil preservation, fossils, particularly vertebrate fossils, are considered nonrenewable paleontological resources. Occasionally fossils may be exposed at the surface through the process of natural erosion or because of human disturbances; however, they generally lay buried beneath the surficial soils. Thus, the absence of fossils on the surface does not preclude the possibility of their being present within subsurface deposits, while the presence of fossils at the surface is often a good indication that more remains may be found in the subsurface.

SIGNIFICANCE CRITERIA

According to guidelines proposed by Eric Scott and Kathleen Springer (2003) of the San Bernardino County Museum, paleontological resources can be considered to be of significant scientific interest if they meet one or more of the following criteria:

1. The fossils provide information on the evolutionary relationships and developmental trends exhibited among organisms, living or extinct;
2. The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein;
3. The fossils provide data regarding the development of biological communities or the interactions between paleobotanical and paleozoological biotas;
4. The fossils demonstrate unusual or spectacular circumstances in the history of life; and/or
5. The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.

PALEONTOLOGICAL SENSITIVITY

The fossil record is unpredictable, and the preservation of organic remains is rare, requiring a particular sequence of events involving physical and biological factors. Skeletal tissue with a high percentage of mineral matter is the most readily preserved within the fossil record; soft tissues not intimately connected with the skeletal parts, however, are the least likely to be preserved (Raup and Stanley 1978). For this reason, the fossil record contains a biased selection not only of the types of organisms preserved but also of certain parts of the organisms themselves. As a consequence, paleontologists are unable to know with certainty, the quantity of fossils or the quality of their preservation that might be present within any given geologic unit.

Sedimentary units that are paleontologically sensitive are those geologic units (mappable rock formations) with a high potential to contain significant nonrenewable paleontological resources. More specifically, these are geologic units within which vertebrate fossils or significant invertebrate fossils have been determined by previous studies to be present or are likely to be present. These units include, but are not limited to, sedimentary formations that contain significant paleontological resources anywhere within their geographical extent as well as sedimentary rock units temporally or lithologically amenable to the preservation of fossils.

A geologic formation is defined as a stratigraphic unit identified by its lithic characteristics (e.g., grain size, texture, color, and mineral content) and stratigraphic position. There is a direct relationship between fossils and the geologic formations within which they are enclosed and, with sufficient knowledge of the geology and stratigraphy of a particular area, it is possible for paleontologists to reasonably determine the formation's potential to contain significant nonrenewable vertebrate, invertebrate, marine, or plant fossil remains.

The paleontological sensitivity for a geologic formation is determined by the potential for that formation to produce significant nonrenewable fossils. This determination is based on what fossil resources the particular geologic formation has produced in the past at other nearby locations. Determinations of paleontologic sensitivity must consider not only the potential for yielding vertebrate fossils but also the potential of yielding a few significant fossils that may provide new and significant taxonomic, phylogenetic, and/or stratigraphic data.

The Society of Vertebrate Paleontology issued a set of standard guidelines intended to assist paleontologists to assess and mitigate any adverse effects/impacts to nonrenewable paleontological resources. The guidelines defined four categories of paleontological sensitivity for geologic units that might be impacted by a proposed project, as listed below (Society of Vertebrate Paleontology 2010:1-2):

- **High Potential**: Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered.
- **Undetermined Potential**: Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment.
- **Low Potential**: Rock units that are poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances.
- **No Potential**: Rock units that have no potential to contain significant paleontological resources, such as high-grade metamorphic rocks and plutonic igneous rocks.

SETTING

The proposed project is located in the northern portion of the Peninsular Ranges geomorphologic province, where a series of northwest-southeast-trending mountain ranges and valleys lie subparallel to fault lines branching from the San Andreas Fault (Jenkins 1980:40-41; Harms 1996:150). The topography in this region generally consists of granitic rock intruding into older metamorphic rock (Jenkins 1980:40-41). The project location lies at the northwestern end of the Corona-Elsinore Trough and within the Corona compound alluvial fan that slopes northeast across the trough (Gray 1961:5, 8). Surrounding area is known to contain exposures of the late-Cretaceous Ladd Formation and the younger Paleocene Silverado Formation, which is composed of marine and nonmarine beds (*ibid.*:10).

More specifically, the project area is situated on and near an undeveloped hill along the southwestern side of Foothill Parkway, surrounded by the Santa Ana Mountains on the west and recent suburban residential development on the east (Fig. 3). Also present nearby is a commercial nursery on the adjacent property to the south. Elevations on the property range approximately from 1,115 feet to 1,230 feet above mean sea level, and the terrain features primarily rolling hills with some areas leveled in the past. Soils in the vicinity consist of yellow-brown fine to coarse sands with small to large rocks and cobblestones. The surface soils have been extensively disturbed by earth-moving activities associated with the leveling of the hilltop, grading, and the construction of a concrete-paved road (Fig. 4).

Figure 4. Current natural setting of the project area. (Photograph taken on July 30, 2019; view to the west)

Despite the previous ground disturbances, the native plants have regrown in some areas while a mix of native and invasive species were observed elsewhere. Thick chaparral is present along the western project boundary, and dense vegetation covers much of the slopes of the hill and the leveled area in the northern portion of the property. Clusters of eucalyptus, oak, scrub oak, and other large trees are noted along the western and northern project boundaries. Other vegetation observed in the project area includes buckwheat, tree tobacco, sagebrush, sage, laurel-leaf sumac, datura, mustard, and foxtail.

METHODS AND PROCEDURES

RECORDS SEARCH

The paleontological records search for this study was provided by the Natural History Museum of Los Angeles County (NHMLAC) in Los Angeles, which maintains files of regional paleontological localities as well as supporting maps and documents. The records search results are used to identify known previously performed paleontological resource assessments as well as known paleontological localities within a one-mile radius of the project area. A copy of the records search results is attached to this report in Appendix 2.

LITERATURE REVIEW

In conjunction with the records searches, CRM TECH report writer Deirdre Encarnación pursued a literature review on the project area. Sources consulted during this part of the research include primarily topographic and geologic maps of the surrounding area, published geologic literature pertaining to the project location, and other materials in the CRM TECH library, including unpublished reports produced during similar surveys on nearby properties.

FIELD SURVEY

On July 30, 2019, CRM TECH paleontological surveyor Daniel Ballester carried out the field survey of the project area under the direction of CRM TECH geologist/paleontologist Harry M. Quinn. The relatively level and open areas on the hilltop and in the northwestern portion of the property were surveyed at an intensive level by walking a series of parallel east-west transects spaced 15 meters (approximately 50 feet) apart, while the heavily vegetated areas on the uneven slopes and in a drainage near the southern project boundary were surveyed at a reconnaissance level, focusing on the inspection of the ground surface wherever it was exposed.

Using these methods, the ground surface in the entire project area was systematically and carefully examined to determine the soil types, to verify the geological formations, and to look for any indications of paleontological remains. Ground visibility ranged from poor (0%) to fair (70%) depending upon the density of the vegetation growth. In light of the extent of past ground disturbance in the project area, the levels of field effort and ground visibility were considered to be adequate for this study.

RESULTS AND FINDINGS

RECORDS SEARCHES

The paleontological resources records search identified no known vertebrate paleontological localities within the project area. However, the NHMLAC reported fossil localities nearby from three distinct sediment types that are potentially present at the surface or at depth within project boundaries (McLeod 2019; see App. 2). Most of the project area has exposures of marine late-Cretaceous Ladd Formation, and the closest fossil locality known in that formation was found in a cliff face on the south side of Silverado Canyon to the south-southwest of the project area (McLeod 2019:2). That locality, LACM 4221, produced fossil teeth of a large, mako-like shark (*Cretolamna appendiculate*; *ibid*.). The next-closest locality located east of Santiago Canyon yielded fossil teeth of mackerel shark (*Squalicorax falcatus*; *ibid*.). Another fossil locality from the Ladd Formation, also in Santiago Canyon, yielded a rare fossil dinosaur specimen of Hadrosauridae (*ibid*.).

Surficial deposits of younger Quarternary alluvium are present in the northern portion of the project area and possibly in the very southeastern corner (McLeod 2019:1). These sediments do not typically contain vertebrate fossils in the uppermost layers but may hold significant vertebrate fossil remains at relatively shallow depths in older Quarternary deposits (*ibid*.). The closest fossil locality from these sediments is located northeast of the project area and produced fossil specimen of deer (*Odocoileus*; *ibid*.). The southeastern and southwestern portions of the project area contain exposures of the Paleocene Silverado Formation, which have yielded fossil turtle Testudinidae elsewhere (*ibid*.).

Based on these findings, the NHMLAC assigned a low paleontological potential to shallow excavations in the northern portion and southeastern corner of the project area. However, the museum further stated that deeper excavations in those areas and in all exposures of the Silverado Formation or the Ladd Formation could encounter significant vertebrate fossil remains (McLeod 2019:2).

LITERATURE REVIEW

Gray (1961:12) has reported the presence of fossils in limestone lenses within the Ladd Canyon formation in the Santa Ana Mountains. This formation consists of metasedimentary rocks similar to those reported to be present within the project area. The Ladd Formation is described as “brownish, massive to thick-bedded conglomerate and sandstone with a brownish-gray sandy siltstone or shale at the top of the succession” (*ibid*.:20). Fossil cephalopods have been recovered from the Ladd Formation (*ibid*.).

Paleocene rocks of the Silverado Formation are also present within the project area, described as “brown to reddish brown or white to greenish-gray and gray sandstone which is locally clay-bearing and contains quartz-rich facies, conglomerate, siltstone, and silty claystone” (Gray 1961:23). Marine fossils have been recovered from the upper part of the Silverado Formation, but the recovery of fresh- and brackish-water fossils from the lower part of the formation point to a non-marine depositional environment in that portion (*ibid*.:25).

Gray et al. (2002) identify four types of sediments within project boundaries (Fig. 5). Among thede are young surficial deposits of *Qyls*, or young landslide deposits of Holocene and late Pleistocene age, described as "rock debris and rubble, unsorted" (*ibid*.). The other types of sediments identified in the project area include older surficial deposits of *Kl*, *Kwl*, and *Tsi*. *Kl*, or Ladd Formation of upper Cretaceous age, consists of conglomerate, sandstone, siltstone, and shale (*ibid*.). *Kwl* is of the Williams and Ladd Formations, undifferentiated, of Upper Cretaceous age, which is described as "sandstone, siltstone, conglomerate, and conglomeratic sandstone…all are feldspatic" (*ibid*.). *Tsi* is Paleocene-age Silverado Formation, described as "nonmarine and marine sandstone, siltstone, and conglomerate" (*ibid*.).

FIELD SURVEY

The field survey encountered no surficial indications of any fossil remains within or adjacent to the project area. As stated above, the ground surface in the entire project area has clearly been disturbed in the past, and aerial photographs consulted during this study demonstrate that these disturbances have occurred since the early years of the current century (Google Earth 1994-2018). Between 2002 and 2016, the top of the hill in the project area was leveled, and the entire project area was cleared of vegetation and graded at different times (Google Earth 2002-2016). As a result of these past disturbances, the current ground surface in the project area is essentially an artificial creation that provides little information on the potential for the subsurface sediments to contain fossil remains.

CONCLUSION AND RECOMMENDATIONS

CEQA guidelines (Title 14 CCR App. G, Sec. V(c)) require that public agencies in the State of California determine whether a proposed project would "directly or indirectly destroy a unique paleontological resource" during the environmental review process. The present study, conducted in compliance with this provision, is designed to identify any significant, nonrenewable paleontological resources that may exist within or adjacent to the project area and to assess the possibility for such resources to be encountered in future excavation and construction activities.

In summary of the research results presented above, the proposed project's potential to impact significant paleontological resources appears to be low in the surface sediments of younger Quarternary alluvium in the northern portion and the southeastern corner of the property but high in the exposures of marine late-Cretaceous Ladd Formation and Paleocene Silverado Formation elsewhere and in the older Quaternary sediments underlying the younger Quarternary alluvium. The current surface soils in the project area, however, have been extensively disturbed over the past 17 years and essentially constitute artificial fill.

In order to prevent project impacts on significant, nonrenewable paleontological resources or to reduce such impacts to a level less than significant, CRM TECH recommends that a mitigation program be developed and implemented during any earth-moving operations reaching beyond the previously disturbed surface soils. The mitigation program should be developed in accordance with the provisions of CEQA as well as the proposed guidelines of the Society of Vertebrate Paleontology (2010), and should include but not be limited to the following:

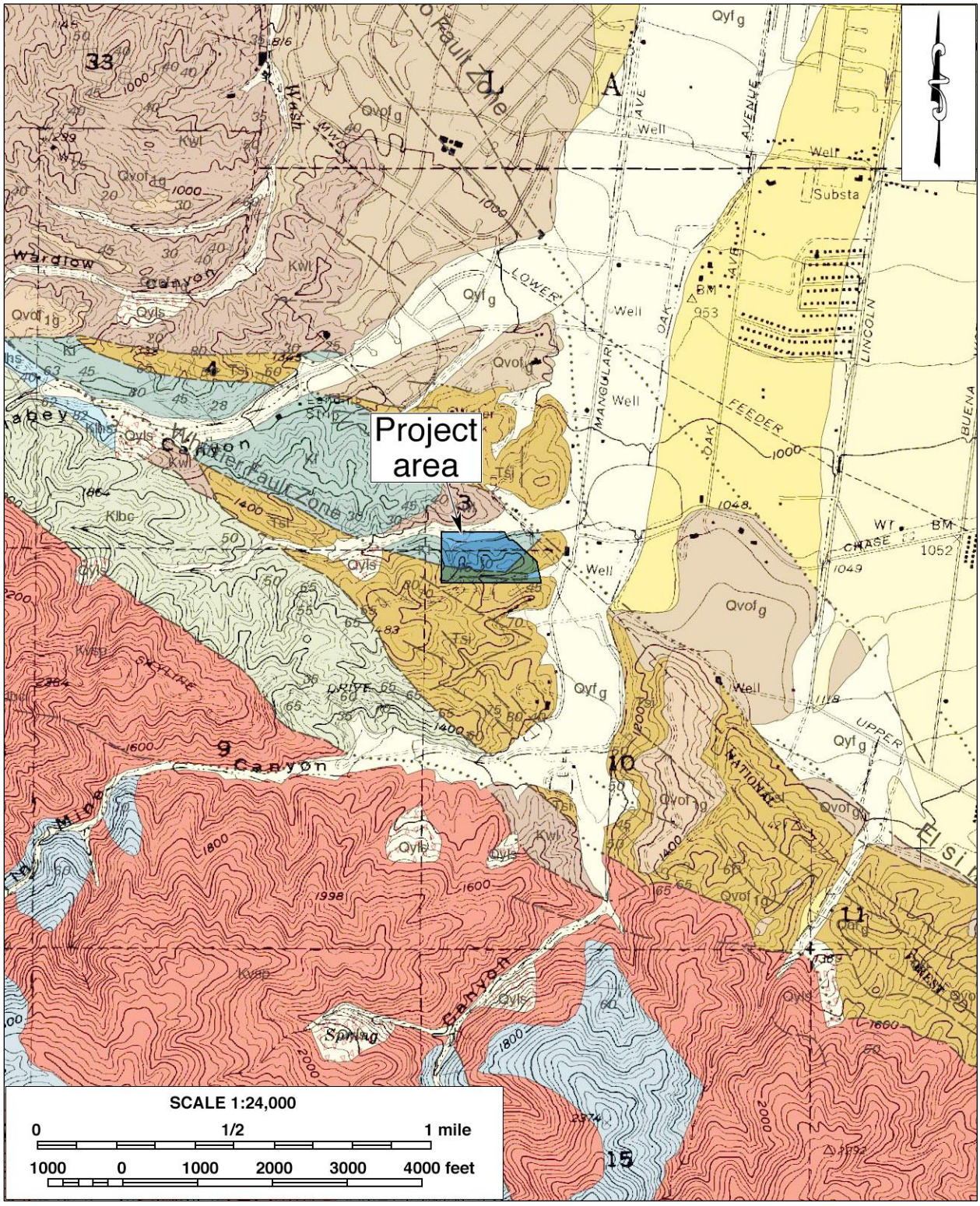

Figure 5. Geologic map of the project area. (Based on Gray et al. 2002)

- All earth-moving operations at or below the depth of five feet, or at shallower depths if the paleontologically sensitive soils are encountered, should be monitored by a qualified paleontological monitor. The monitor should be prepared to quickly salvage fossils, if they are unearthed, to avoid construction delays, but must have the power to temporarily halt or divert construction equipment to allow for removal of abundant or large specimens.
- Samples of sediments should be collected and processed to recover small fossil remains.
- Recovered specimens should be identified and curated at a repository with permanent retrievable storage that would allow for further research in the future.
- A report of findings, including an itemized inventory of recovered specimens and a discussion of their significance when appropriate, should be prepared upon completion of the research procedures outlined above. The approval of the report and the inventory by the City of Corona would signify completion of the mitigation program.

REFERENCES

English, W.A.

1926 *Geology and Oil Resources of the Puente Hills Region, Southern California*. U.S. Geological Survey Bulletin 146. Washington, D.C.

Google Earth

1994-2018 Aerial photographs of the project vicinity; taken in 1994, 2002, 2003, 2005, 2006, and 2009-2018. Available through the Google Earth software.

Gray, Cliffton H., Jr.

1961 *Geology of the Corona South Quadrangle and the Santa Ana Narrows Area, Riverside, Orange, and San Bernardino Counties, California, and Mines and Mineral Deposits of the Corona South Quadrangle, Riverside and Orange Counties, California*. California Division of Mines, San Francisco.

Gray, Cliffton H., Jr., Douglas M. Morton, and F. Harold Weber, Jr.

2002 Geologic Map of the Corona South 7.5' Quadrangle, Riverside and Orange Counties, California. Digital preparation by Kelly R. Bovard and Timothy O'Brien. U.S. Geological Survey Open-File Report 01-021.

Harms, Nancy S.

1996 *A Precollegiate Teachers Guide to California Geomorphic/Physiographic Provinces*. National Association of Geoscience Teachers, Far West Section, Concord, California.

Jenkins, Olaf P.

1980 Geomorphic Provinces Map of California. *California Geology* 32(2):40-41. California Division of Mines and Geology, Sacramento.

McLeod, Samuel A.

2019 Paleontological Resources for the Proposed Skyline Village Project, CRM TECH No. 3512P, near the City of Corona, Riverside County. Prepared by the Natural History Museum of Los Angeles County, Vertebrate Paleontology Section, Los Angeles.

Scott, Eric, and Kathleen B. Springer

2003 CEQA and Fossil Preservation in California. *Environmental Monitor* Fall:4-10. Association of Environmental Professionals, Sacramento, California.

Society of Vertebrate Paleontology

2010 Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. http//:vertpaleo.org/Membership/Member-Resources/SVP_Impact_Mitigation_Guidelines.aspx.

APPENDIX 1

PERSONNEL QUALIFICATIONS

PROJECT GEOLOGIST/PALEONTOLOGIST
Harry M. Quinn, M.S., California Professional Geologist #3477

Education

1968 M.S., Geology, University of Southern California, Los Angeles, California.
1964 B.S, Geology, Long Beach State College, Long Beach.
1962 A.A., Los Angeles Harbor College, Wilmington, California.

- Graduate work oriented toward invertebrate paleontology; M.S. thesis completed as a stratigraphic paleontology project on the Precambrian and Lower Cambrian rocks of Eastern California.

Professional Experience

2000- Project Paleontologist, CRM TECH, Riverside/Colton, California.
1998- Project Archaeologist, CRM TECH, Riverside/Colton, California.
1992-1998 Independent Geological/Geoarchaeological/Environmental Consultant, Pinyon Pines, California.
1994-1996 Environmental Geologist, E.C E.S., Inc, Redlands, California.
1988-1992 Project Geologist/Director of Environmental Services, STE, San Bernardino, California.
1987-1988 Senior Geologist, Jirsa Environmental Services, Norco, California.
1986 Consulting Petroleum Geologist, LOCO Exploration, Inc. Aurora, Colorado.
1978-1986 Senior Exploration Geologist, Tenneco Oil E & P, Englewood, Colorado.
1965-1978 Exploration and Development Geologist, Texaco, Inc., Los Angeles, California.

Previous Work Experience in Paleontology

1969-1973 Attended Texaco company-wide seminars designed to acquaint all paleontological laboratories with the capability of one another and the procedures of mutual assistance in solving correlation and paleo-environmental reconstruction problems.

1967-1968 Attended Texaco seminars on Carboniferous coral zonation techniques and Carboniferous smaller foraminifera zonation techniques for Alaska and Nevada.

1966-1972, 1974, 1975 Conducted stratigraphic section measuring and field paleontological identification in Alaska for stratigraphic controls. Pursued more detailed fossil identification in the paleontological laboratory to establish closer stratigraphic controls, mainly with Paleozoic and Mesozoic rocks and some Tertiary rocks, including both megafossil and microfossil identification, as well as fossil plant identification.

1965 Conducted stratigraphic section measuring and field paleontological identification in Nevada for stratigraphic controls. Pursued more detailed fossil identification in the paleontological laboratory to establish closer stratigraphic controls, mainly with Paleozoic rocks and some Mesozoic and Tertiary rocks. The Tertiary work included identification of ostracods from the Humboldt and Sheep Pass Formations and vertebrate and plant remains from Miocene alluvial sediments.

Memberships

Society of Vertebrate Paleontology; American Association of Petroleum Geologists; Association of Environmental Professionals; Rocky Mountain Association of Geologists, Pacific Section; Society of Economic Paleontologists and Mineralogists; San Bernardino County Museum.

Publications in Geology

Five publications in Geology concerning an oil field study, a ground water and earthquake study, a report on the geology of the Santa Rosa Mountain area, and papers on vertebrate and invertebrate Holocene Lake Cahuilla faunas.

PALEONTOLOGICAL SURVEYOR
Daniel Ballester, M.S.

Education

2013	M.S., Geographic Information System (GIS), University of Redlands, California.
1998	B.A., Anthropology, California State University, San Bernardino.
1997	Archaeological Field School, University of Las Vegas and University of California, Riverside.
1994	University of Puerto Rico, Rio Piedras, Puerto Rico.

- Cross-trained in paleontological field procedures and identifications by CRM TECH Geologist/Paleontologist Harry M. Quinn.

Professional Experience

2002-	Field Director/GIS Specialist, CRM TECH, Riverside/Colton, California.
2011-2012	GIS Specialist for Caltrans District 8 Project, Garcia and Associates, San Anselmo, California.
2009-2010	Field Crew Chief, Garcia and Associates, San Anselmo, California.
2009-2010	Field Crew, ECorp, Redlands.
1999-2002	Project Archaeologist, CRM TECH, Riverside, California.
1998-1999	Field Crew, K.E.A. Environmental, San Diego, California.
1998	Field Crew, A.S.M. Affiliates, Encinitas, California.
1998	Field Crew, Archaeological Research Unit, University of California, Riverside.

REPORT WRITER
Deirdre Encarnación, M.A.

Education

2003	M.A., Anthropology, San Diego State University, California.
2000	B.A., Anthropology, minor in Biology, with honors; San Diego State University, California.
1993	A.A., Communications, Nassau Community College, Garden City, N.Y.
2001	Archaeological Field School, San Diego State University.
2000	Archaeological Field School, San Diego State University.

Professional Experience

2004-	Project Archaeologist/Report Writer, CRM TECH, Riverside/Colton, California.
2001-2003	Part-time Lecturer, San Diego State University, California.
2001	Research Assistant for Dr. Lynn Gamble, San Diego State University.

APPENDIX 2

RECORDS SEARCH RESULTS

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213-763-3466
nhm.org

Vertebrate Paleontology Section
Telephone: (213) 763-3325

e-mail: smcleod@nhm.org

22 July 2019

CRM Tech
1016 East Cooley Drive, Suite B
Colton, CA 92324

Attn: Nina Gallardo, Project Archaeologist

re: Paleontological resources for the proposed Skyline Village Project, CRM TECH No. 3512P, near the City of Corona, Riverside County, project area

Dear Nina:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed Skyline Village Project, CRM TECH No. 3512P, near the City of Corona, Riverside County, project area as outlined on the portion of the Corona South USGS topographic quadrangle map that you sent to me via e-mail on 8 July 2019. We do not have any vertebrate fossil localities that lie directly within the proposed project area boundaries, but we do have localities nearby from the same deposits that occur in the proposed project area, either at the surface or at depth.

In the drainage in the northern portion of the proposed project area, and possibly the very southeastern portion as well, there are surficial deposits of younger Quaternary Alluvium, derived as alluvial fan deposits from the surrounding elevated terrain. These deposits usually do not contain significant vertebrate fossils in the uppermost layers, but may contain significant vertebrate fossils in older Quaternary deposits at relatively shallow depth. Our closest vertebrate fossil locality from these deposits is LACM 1207, northeast of the proposed project area north of the Riverside Freeway (Highway 91) on the west side of Cota Street in the Temescal Wash area, that produced a fossil specimen of deer, *Odocoileus*. In the southwestern and southeastern portions of the proposed project area there are exposures of the Paleocene Silverado Formation. Our only Silverado Formation locality from this area, LACM 4634, produced a specimen of a fossil turtle, Testudinidae.

Most of the proposed project area has exposures of the marine late Cretaceous Ladd Formation. Our closest Ladd Formation locality is LACM 4221, south-southwest of the proposed project area in a cliff face on the south side of Silverado Canyon, west of Silverado. Locality LACM 4221 yielded fossil shark teeth of a large mako-like shark, *Cretolamna appendiculata*, and a mackerel shark, *Squalicorax*. Our next closest Ladd Formation locality is LACM 1895, located south of the proposed project area in the Santa Ana Mountains east of Santiago Canyon, where a fossil specimen of mackerel shark, *Squalicorax falcatus,* was recovered. This latter specimen of *Squalicorax falcatus* was figured in the scientific literature by S.P. Applegate (1964. First Record of the Extinct Shark, *Squalicorax falcatus*, from California. Bulletin of the Southern California Academy of Sciences, 63(1):42-43) and published again by B.J. Welton et.al. (1981. A Preliminary Note on the Late Cretaceous Sharks of the Chatsworth Formation at Dayton Canyon, Simi Hills, Los Angeles County, California. September Guidebook). Our vertebrate fossil locality LACM (CIT) 592 from the Ladd Formation (or possibly the marine late Cretaceous Williams Formation) in the Santiago Canyon area produced a rare specimen of a fossil dinosaur, Hadrosauridae, from California, published in the scientific literature by W. J. Morris (1973. Journal of Paleontology, 47(3):551-561; 1982. SEPM Field Trip Volume & Guidebook, 89-90).

Shallow excavations in the younger Quaternary Alluvium exposed in the very northern and possibly the very southeastern portion of the proposed project area are unlikely to uncover significant fossil vertebrate remains. Deeper excavations there that extend down into older sedimentary deposits, as well as any excavations in the exposures of the Silverado Formation or the Ladd Formation, however, may well encounter significant vertebrate fossil remains. Any substantial excavations in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed project area. Any fossil materials uncovered during mitigation activities should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice