APPENDIX K

Paleontological Resources Inventory Report

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February 25, 2025 15375

Corey Harpole
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Subject: Paleontological Resources Inventory Report for the Belcaro at Sand Canyon Project, City of Santa Clarita, Los Angeles County, California

Dear Corey Harpole:

This letter documents the results of the paleontological resources inventory conducted by Dudek for the proposed Belcaro at Sand Canyon Project (project). The project site is comprised of approximately 193.8 gross acres (179.2 net acres) and is situated in the easternmost part of the City of Santa Clarita, which lies in the northern portion of Los Angeles County (Figure 1 - Project Location). The project site is separated into two parts by the Southern Pacific Railroad, which runs east-west just south of the northern portion of the project site. The project site consists of the following Assessor Parcel Numbers (APNs): 2840-001-118, 2840-015-025, -031, -032, -033, -034, -035, -045, and -047. The project site is located approximately 26 miles north of downtown Los Angeles and is locally accessible via Lost Canyon Road and Oak Springs Canyon Road. Regionally, the project site is accessible from State Route 14 (SR-14) freeway via Sand Canyon Road, west of the project site and is found on the Mint Canyon, California US Geologic Survey (USGS) 7.5-minute topographic quadrangle map, Township 4N, Range 15W, Sections 13, 14, 23, and 24.

The project would convert vacant parcels into a gated senior community comprised of 341 age-restricted, detached single-family homes, a 3.1-acre recreation center, and 2.6 miles of publicly accessible trails across 193.8 gross acres. The project would result in the creation of 400 separate lots, consisting of 341 residential lots, one recreational lot, 21 private street lots, and 37 open space lots, as shown in Figure 2, Vesting Tentative Tract Map No. 84497.

To determine the paleontological sensitivity of the project site, Dudek performed a paleontological resources inventory for the project to comply with the California Environmental Quality Act (CEQA) and the Society of Vertebrate Paleontology (SVP 2010) guidelines. The inventory consisted of a Natural History Museum of Los Angeles County (NHMLA) paleontological records search, intensive paleontological survey, and review of geological mapping and geological and paleontological literature. The results of the paleontological records search were negative for paleontological resources within the project site; however, the NHMLA reported over two dozen localities near the project site from a geological unit (the Mint Canyon Formation) that is mapped on the surface of a portion of the project site and likely underlies the project site at an unknown depth below the ground surface where not mapped on the surface.

1 Paleontological Resources

Paleontological resources are the remains or traces of plants and animals that are preserved in Earth's crust, and per the Society of Vertebrate Paleontology ([SVP] 2010) guidelines, are older than written history or older than approximately 5,000 years. They are limited, nonrenewable resources of scientific and educational value and are afforded protection under state laws and regulations. This study satisfies requirements in accordance with state guidelines (13 PRC, 21000 et seq.) and Public Resources Code Section 5097.5 (Stats 1965, c 1136, p. 2792). This analysis also complies with guidelines and significance criteria specified by SVP (2010). Table 1 provides definitions for high, undetermined, low, and no paleontological resource potential, or sensitivity, as set forth in and by the SVP (2010) Guidelines for Determining Significance: Paleontological Resources.

Table 1. Paleontological Resource Sensitivity Criteria

Resource Sensitivity / Potential	Definition
High	Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Rocks units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcaniclastic formations (e. g., ashes or tephras), and some low-grade metamorphic rocks which contain significant paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils (e. g., middle Holocene and older, fine-grained fluvial sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstones, fine-grained marine sandstones, etc.). Paleontological potential consists of both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data. Rock units which contain potentially datable organic remains older than late Holocene, including deposits associated with animal nests or middens, and rock units which may contain new vertebrate deposits, traces, or trackways are also classified as having high potential.
Undetermined Potential	Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine if these rock units have high or low potential to contain significant paleontological resources. A field survey by a qualified professional paleontologist (see "definitions" section in this document) to specifically determine the paleontological resource potential of these rock units is required before a paleontological resource impact mitigation program can be developed. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.

Table 1. Paleontological Resource Sensitivity Criteria

Resource Sensitivity / Potential	Definition
Low Potential	Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some rock units have low potential for yielding significant fossils. Such rock units will be poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule, e. g. basalt flows or Recent colluvium. Rock units with low potential typically will not require impact mitigation measures to protect fossils.
No Potential	Some rock units have no potential to contain significant paleontological resources, for instance high- grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Rock units with no potential require no protection nor impact mitigation measures relative to paleontological resources.

Source: SVP (2010)

2 Regulatory Framework

2.1 California Environmental Quality Act

The CEQA Guidelines require that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to paleontological resources. Paleontological resources, which are limited, nonrenewable resources of scientific, cultural, and educational value, are recognized as part of the environment under these state guidelines. This study satisfies project requirements in accordance with CEQA (Public Resources Code, 21000 et seq.).

CEQA requires projects to undergo an environmental review process to determine the potential impact of a project to paleontological resources, specifically in Section VII(f) of CEQA Guidelines Appendix G, the "Environmental Checklist Form," which addresses the potential for adverse impacts to "unique paleontological resource[s] or site[s] or … unique geological feature[s]." This provision covers scientifically significant fossils, as defined by SVP (2010), Scott and Springer (2003), and Murphy et al. (2019), which would equate to a "unique" paleontological resource, and include, but are not limited to, newly discovered species or genera, fossils exhibiting morphological features not previously recognized for a given animal group, fossils that increase the temporal range of the species, fossils discovered from geological units within which they were previously unknown, fossils that expand the biogeographic range of a species, and/or localities that yield fossils significant in their abundance, diversity, and preservation.

2.2 PRC Section 5097.5

The PRC Section 5097.5 (Stats 1965, c 1136, p. 2792) regulates removal of paleontological resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.

3 Methods

3.1 Geological Map Review, Literature Review, Paleontological Records Search, and Paleontological Survey

Published geological maps and published and unpublished geological and paleontological reports were reviewed to identify geological units on the project site and determine if they are known to produce fossils in order to assign their paleontological sensitivity.

A paleontological records search request was sent to the NHMLA on May 31, 2023. The purpose of the records search was to determine whether there are any known fossil localities in or near the project site to aide in determining if a paleontological mitigation program is warranted to avoid or minimize potential adverse effects of construction on paleontological resources.

Dudek paleontologists, David Alexander and Russell Silberberger surveyed the project site on February 20, 2025. The purpose of the paleontological survey was to determine if any fossils are visible on the surface of the project site and confirm published geological mapping. The survey focused on areas of the project site mapped as having geological units with higher paleontological sensitivity (the Mint Canyon Formation); however, areas of lower paleontological sensitivity were also surveyed, albeit less intensely, mainly to confirm geological mapping.

4 Results

4.1 Geological Map Review, Literature Review, Paleontological Records Search, and Paleontological Survey

The project site is located within the central Transverse Ranges Geomorphic Province, which extends from Point Conception in the west to the San Bernardino Mountains in the east (California Geological Survey [CGS] 2002). This geomorphic province structure is east-west trending and is oblique to the normal northwest trend of coastal California. Regionally, the Transverse Ranges extend westward to include the continental shelf and offshore islands (Santa Cruz, Santa Rosa, San Miguel, and Anacapa Islands) (Norris and Webb 1990; CGS 2002). Regional mountain ranges in the Transverse Ranges Geomorphic Province include the San Bernardino Mountains in the east, which have been displaced to the south along the San Andreas Fault (CGS 2002) and the San Gabriel Mountains, which are situated just to the north of the Project site. Geologically, these mountains are dominated by Cenozoic sedimentary and Mesozoic igneous rocks that have been folded and faulted by north-south compression that is squeezing the Transverse Ranges (Norris and Webb 1990; CGS 2002).

According to the published geological mapping at a scale of 1:24,000 by Dibblee (1996), the project site is underlain by Holocene (< 11,700 years ago; Cohen et al. [2024]) alluvial deposits (map unit Qa), Holocene gravel and sand of major stream channels (map unit Qg), late Pleistocene (approximately 11,700 to 129,000 years ago; Cohen et al. [2024]) low terrace remnants of alluvial gravel and sand (map unit Qoa), and scattered outcrops of the middle Miocene (approximately 11.63 million years ago [mya] to 15.98 mya; Cohen et al. [2024]) Mint Canyon Formation (map unit Tmc) (Figure 2 – Geological Map). The project-specific geotechnical study by LGC Valley, Inc. (2024) did

not cite specific geological mapping but included the results of seven hollow stem auger borings ranging from 9 feet to 51.5 feet below the ground surface (bgs) and four hand-augered borings to a depth of 16 feet bgs, indicated the project site is underlain by artificial fill (map unit af) along the abandoned railroad line in the central portion of the southern parcel and in the southern extension, flood plain deposits (map unit Qfp = Qg of Dibblee [1996]), recent alluvium (map unit Qal = Qa of Dibblee [1996]), terrace deposits (map unit Qt = Qoa of Dibblee [1996]), and the Mint Canyon Formation (map unit Tmc). All seven borings were conducted in areas mapped as being underlain by recent alluvium. With the exception of boring B-LGC-1, which encountered the Mint Canyon Formation at a depth 35 feet below the mapped alluvial deposits in the northern portion of the south parcel, just south of the Southern Pacific Railroad line, the deeper borings encountered alluvial deposits to the maximum depth explored. The presence of the Mint Canyon Formation at this depth is likely due to a mapped Mint Canyon Formation outcrop just to the north of the boring location. The alluvial deposits consisted of variable amounts of light to dark brown clay, silt, sand, and gravel that generally become more consolidated with depth. Artificial fill thicknesses of four to five feet were revealed by two of the hand augered borings, just north of Robertson Ranch Road, in the southernmost portion of the project site. The artificial fill was immediately underlain by the Mint Canyon Formation (LGC Valley, Inc. 2024).

While Holocene alluvial deposits are generally too young to yield significant paleontological resources on the surface at shallow depths bgs, they become older with depth (middle Holocene and Pleistocene) which can produce fossils. Pleistocene alluvial deposits are known to produce significant fossils in the vicinity of the City of Santa Clarita. Jefferson (1991) reported a mammoth (*Mammuthus columbi*) from Acton Railroad Station; a ground sloth (*Paramylodon* sp.) from the San Fernando Dam; a mastodon (*Mammut* sp.) from Chatsworth; horse (*Equus* sp.) and mammoth (*Mammuthus* sp.) from Sylmar; and mammoth (*Mammuthus* sp.) and bison (*Bison* sp.) from the Lower and Upper Van Norman Reservoirs, respectively,

The Mint Canyon Formation falls within the Clarendonian and Barstovian North American Land Mammal Ages (NALMA), with the Clarendonian NALMA being defined by the first occurrence of the small artiodactyl, *Pseudoceras*, and the Barstovian NALMA being defined by the first occurrence of hemicyonine bear, *Plithocyon* (Tedford et al. 2004). This formation is nonmarine and characterized by a lower fine-grained unit and upper coarse-grained unit (Durham et al. 1954; Muehlberger 1954; Winterer and Durham 1962). The Mint Canyon Formation has a long history of producing fossil floras and faunas. Axelrod (1940) reported 15 identifiable plant species from the formation and Mount (1971) identified 18 species from a different Mint Canyon fossil locality. Winterer and Durham (1962) mention the presence of a freshwater mollusks having been identified from the formation. Some of the Mint Canyon vertebrate fossils reported in the literature include turtles and tortoises, birds, rodents, rabbits, pronghorns, extinct elephant relatives, camels, rhinoceroses, several horse species, and carnivores (Maxson 1928, 1930; Durham et al. 1954; Winterer and Durham 1962).

The NHMLA paleontological records search results letter was received on June 4, 2023. No records of fossil localities were found within the boundaries of the project site; however, the museum reported numerous fossil localities from the Mint Canyon Formation in the vicinity of project site (Confidential Attachment B). These localities are detailed in Table 2 below.

Table 2. Paleontological Records Search Results

LACM Locality Number	Location	Formation	Lithology	Taxa	Depth Below Surface
LACM VP* 1006, 1007; CIT** 100 – 103, 199, 201, 206, 351, 430-433, 442, 443, 479, 480, 482	Non-georeferenced localities in Mint Canyon and Vicinity	Mint Canyon	Not disclosed	Vertebrates, including artiodactyls, rhinoceros (Rhinocerotidae), and horse (Equidae), and leaves	Unknown but likely found on the surface
LACM VP 564-568	North of Solemint, California in Mint Canyon	Mint Canyon	Not disclosed	Rabbit family (Lagomorpha), antelope family (Antilocapridae), and other unspecified vertebrates	Unknown
LACM VP 6364	Cruzan Mesa, north of Solemint, California	Mint Canyon	Not disclosed	Primitive horse (*Pliohippus*)	Unknown
LACM VP 5150, 6363	Cruzan Mesa north of Solemint, California	Mint Canyon	Not disclosed	Primitive horse (*Pliohippus*)	Unknown

Source: NHMLA Paleontological Records Search Results
* Los Angeles County Museum Vertebrate Paleontology
** California Insitute of Technology

Due to the presence of Mint Canyon Formation outcrops within the project site, the NHMLA recommended a complete paleontological assessment of the project site, which this study satisfies.

No fossil localities were discovered during the paleontological survey; however, a scientifically insignificant fossil root cast was observed in a sandstone layer of the Mint Canyon Formation (Attachment A – Survey Photos). The majority of the project site was heavily vegetated with little exposed ground surface, precluding an intensive pedestrian survey of much of the site (Attachment A – Survey Photos). An exposure of the Mint Canyon Formation, where the Santa Clara River eroded a hill, was intensely surveyed, as were the other Mint Canyon Formation outcrops with exposed geology (Attachment A – Survey Photos). Lithologically, the exposed sections were composed of interbedded fine to medium coarse sands and subrounded pebbles and cobbles.

5 Summary and Management Recommendations

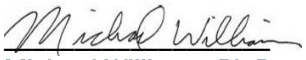
No paleontological resources were identified within the project site as a result of the institutional records search, desktop geological review, and paleontological survey. The paleontological records search conducted by the NHMLA revealed numerous nearby Mint Canyon fossil localities. The recent artificial fill has no paleontological sensitivity, Holocene alluvial deposits and Holocene gravel and sand of major stream channels have low paleontological sensitivity on the surface increasing with depth bgs, the late Pleistocene low terrace remnants of alluvial gravel and sand mapped in the northeast corner of the project site have high paleontological sensitivity, and scattered outcrops of the middle Miocene Mint Canyon Formation have high paleontological sensitivity. Based on the records search

results, paleontological survey, and map and literature review, the project site has high potential to produce paleontological resources during planned construction activities in areas underlain by Holocene deposits at depth, Pleistocene deposits, and the Mint Canyon Formation, In the event that intact paleontological resources are discovered on the project site, ground-disturbing activities associated with construction of the project, such as grading and large diameter (two feet and greater) augering during site preparation and trenching for utilities, have the potential to destroy a unique paleontological resource or site. Without mitigation, the potential damage to paleontological resources during construction would be a potentially significant impact. With implementation of the following recommended mitigation measure (MM), impacts would be reduced to below a level of significance. Impacts of the project are considered less than significant with mitigation incorporated during construction.

MM GEO-1: Paleontological Resources Mitigation and Monitoring Program and Paleontological Monitoring. Prior to commencement of any grading activity on site, the applicant shall retain a qualified paleontologist per the Society of Vertebrate Paleontology (2010) guidelines. The qualified paleontologist shall prepare a Paleontological Resources Mitigation and Monitoring Program (PRMMP) for the project that is consistent with the SVP (2010) guidelines and outlines requirements for preconstruction meeting attendance and worker environmental awareness training; where paleontological monitoring is required within the project site based on construction plans and/or geotechnical reports; procedures for adequate paleontological monitoring and discoveries treatment; and paleontological methods (including sediment sampling for microinvertebrate and microvertebrate fossils), reporting, and collections management. A qualified paleontological monitor shall be on site during ground-disturbing activities (including augering) below a depth of five feet below the ground surface in areas underlain by Holocene alluvial deposits and Holocene gravel and sand of major stream channels to determine if they are old enough to preserve scientifically significant paleontological resources. Full time paleontological monitoring is required in areas underlain by late Pleistocene deposits and the Mint Canyon Formation. In the event that paleontological resources (e.g., fossils) are unearthed during grading, the paleontological monitor will temporarily halt and/or divert grading activity to allow recovery of paleontological resources. The area of discovery will be roped off with a 50-foot radius buffer. Once documentation and collection of the find is completed, the monitor will allow grading to recommence in the area of the find. Upon completion of the monitoring program, a final paleontological monitoring report shall by submitted to the City of Santa Clarita and in the case of fossil recovery, the accredited fossil repository (e.g., the Natural History Museum of Los Angeles County). Costs associated with laboratory work and curation fees are the responsibility of the project applicant.

Should you have any questions relating to this report and its findings please contact Michael Williams (mwilliams@dudek.com).

Respectfully Submitted,



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Att.: *Figure 1, Project Location*
Figure 2, Geological Map
Attachment A, Survey Photos
Attachment B, LACM Records Search Results (Confidential)
cc: *Sarah Siren, Dudek*
Roshanne Bakhtiary, Dudek
Benny Sam, Madison Real Estate Consulting

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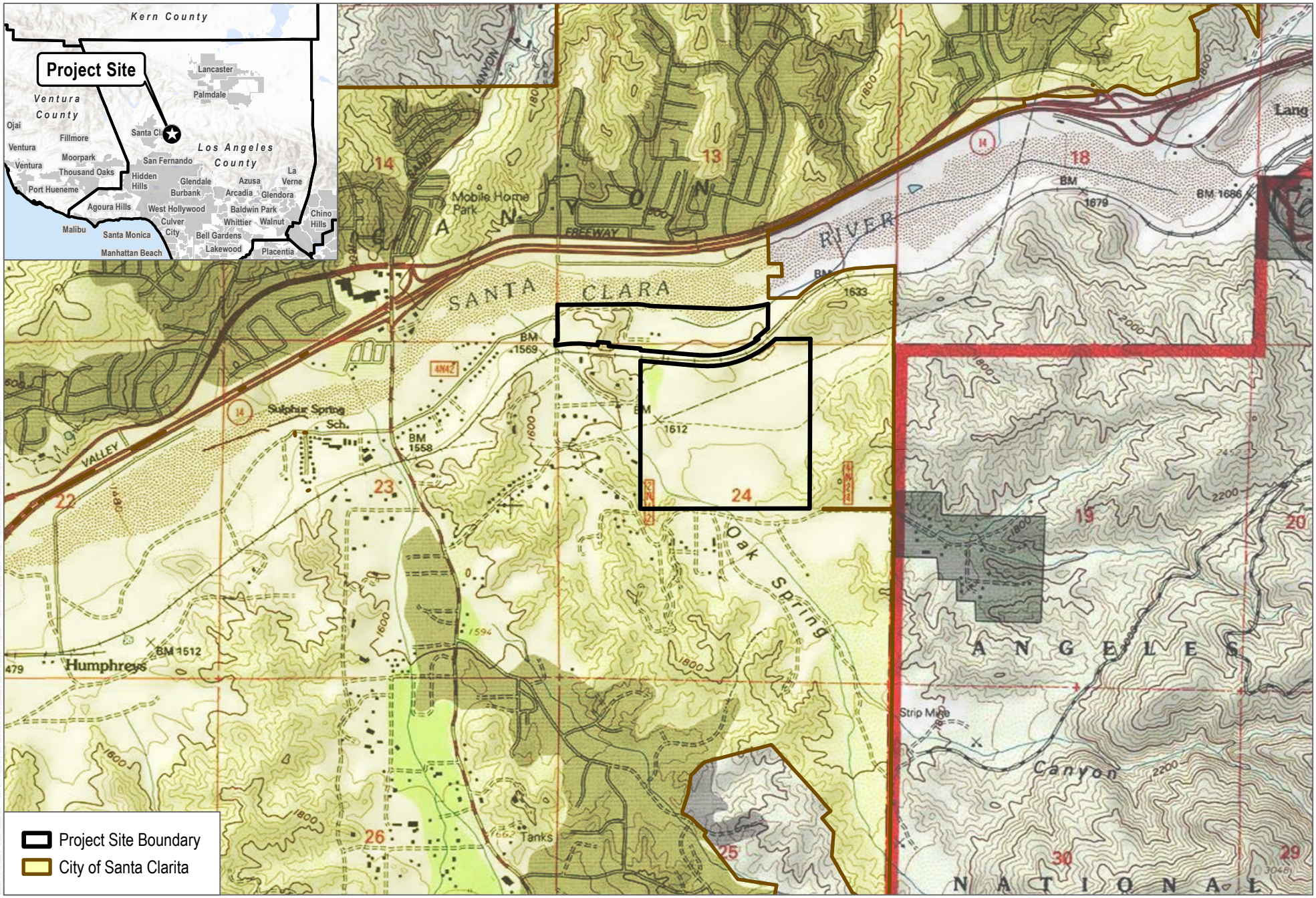


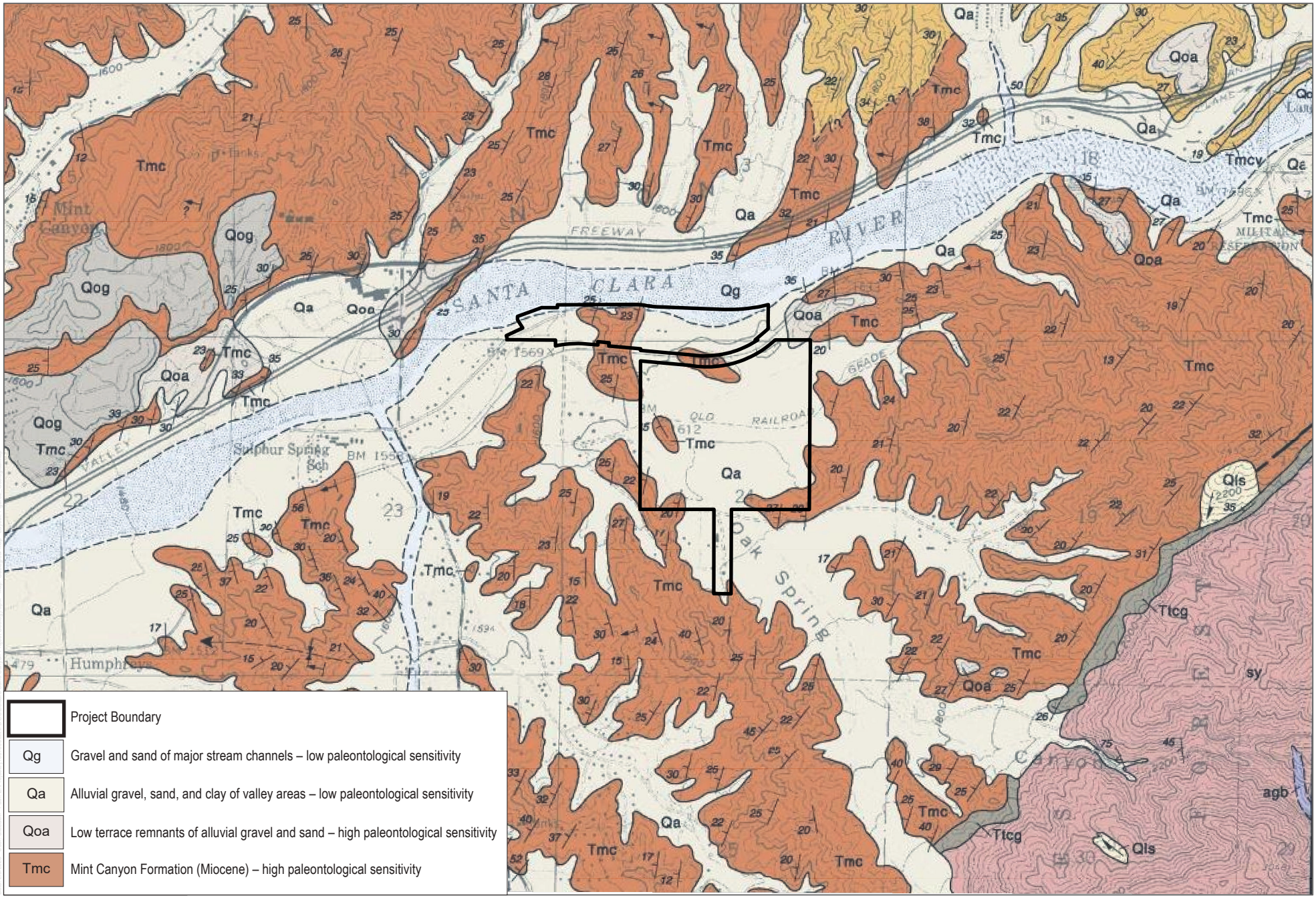
SOURCE: USGS National Map 2024

0 1,000 2,000 Feet

FIGURE 1

Project Location

Belcaro at Sand Canyon Project



SOURCE: Dibblee 1996

DUDEK

0 1,000 2,000 Feet

FIGURE 2

Geological Map

Belcaro Sand Canyon Project

Attachment A

Survey Photos

Photograph 1: Panoramic view of project site showing limited ground surface visibility. View to the northwest.

Photograph 2: Mint Canyon Formation outcrop along Santa Clara River. View to the east.

Photograph 3: Fossilized root cast in Mint Canyon Formation sandstone. View down.

Photograph 4: Mint Canyon Formation outcrop showing interbeds. View to the northwest.

Attachment B

NHMLA Records Search Results (Confidential)