PHASE I PALEONTOLOGICAL RESOURCES ASSESSMENT: ALESSANDRO AND OLD 215 FRONTAGE PROJECT, CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA

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August 2021

Type of Study: Paleontological resources assessment
Paleontological Resources within Area of Potential Impact: None
Paleontological Sensitivity: High B Sensitivity
USGS 7.5-minute Quadrangle: Riverside East, Section 10 of Township 3S, Range 4W
APNs: 263-230-002, 236-220-003, 263-220-004, 263-220-008, 263-220-009, 263-220-017, 263-220-018, 263-220-023, 263-220-027, and 263-220-029
Survey Acreage: Approx. 11.5 acres
Date of Field Survey: April 22, 2021
Key Words: Paleontology, CEQA, Phase I Survey, Negative Paleontological Survey, Riverside County, High B Sensitivity, Qoa, Older alluvium, Qa, Quaternary alluvium

MANAGEMENT SUMMARY

Phelan Development proposes the construction of six warehouses buildings, called the Alessandro and Old 215 Frontage Project (Project or Project Area). The proposed Project consists of the construction of six warehouse buildings (A-F) and associated parking on an approximately 11.5-acre site (APN 263-220-018, 263-220-009, 263-220-017 [Monther]; 263-230-002 [Clappier]; 263-220-023, 263-220-004 [HSU]; and portions of 263-220-008, 263-220-027, 263-220-028, 263-220-029 [American Legion]). The Project Area is located south of Bay Avenue and east of Old 215 Frontage Road, City of Moreno Valley, Riverside County, California. Material Culture Consulting, Inc. (MCC) was retained by E|P|D Solutions, Inc. (EPD) to conduct a Phase I paleontological resource investigation of the Project Area. This paleontological resource assessment was conducted in compliance with the California Environmental Quality Act (CEQA), Public Resources Code (13 PRC) 2100, (14 CAC) 15000, Appendix G, Section J, (PRC) 2100-21177, Appendix G, (PRC) 5097.5 and included locality searches, an examination of geologic maps and paleontological literature, and a field survey. According to these regulations and guidelines, if development of a Project has the potential to result in significant impacts to paleontological resources, a plan must be developed to mitigate those impacts to a level which is less than significant. This assessment documents the potential for encountering paleontological resources during development of this Project and provides recommendations on how to mitigate impacts to those resources.

Based on geologic mapping, the Project Area is mapped as Quaternary alluvium, though Quaternary older alluvium is mapped just to the west of the Project. No significant paleontological resources were identified directly within the Project Area during either the locality searches or the field survey. The locality search conducted by the Natural History Museum of Los Angeles County (LACM) did yield nearby localities from sedimentary deposits similar to those that are mapped in the Project Area and known significant fossil localities have been found within the City of Moreno Valley.

The Riverside County Land Information System (RCLIS) GIS data reveals the entirety of the Project Area lies within an area mapped as High B sensitivity. High B sensitivity indicates that these sedimentary rock units have high potential for containing significant non-renewable paleontological resources at depths at or below 5 feet. Excavation during the course of the Project may reach paleontologically sensitive deposits, and, as a result, may impact paleontological resources.

MCC recommends preparation of a Paleontological Resource Impact Management Plan (PRIMP) prior to construction excavation to mitigate any potential impact to non-renewable fossil resources to a less-than-significant level. It is recommended that a professional paleontologist be hired to oversee monitoring and the preparation of a PRIMP. At a minimum, the PRIMP should include the following items:

- A trained and qualified paleontological monitor should perform full-time monitoring of any excavations on the Project that have the potential to impact paleontological resources in undisturbed High sensitivity native sediments, at or below 5 feet in depth. The monitor will have the ability to redirect construction activities to ensure avoidance of adverse impacts to paleontological resources.
- The project paleontologist may re-evaluate the necessity for paleontological monitoring after examination of the affected sediments during excavation, with approval from County and Client representatives.
- Any potentially significant fossils observed shall be collected and recorded in conjunction with best management practices and Society of Vertebrate Paleontology (SVP) professional standards.

- Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

- A report documenting the results of the monitoring, including any salvage activities and the significance of any fossils, will be prepared and submitted to the appropriate County personnel.

All notes, photographs, correspondence and other materials related to this Project are located at MCC, Inc located in Pomona, California.

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INTRODUCTION

Phelan Development proposes the construction of warehouses and buildings, called the Alessandro and Old 215 Frontage (Project). The proposed Project consists of the construction of six warehouse buildings (A-F) and associated parking lots on an approximately 11.5-acre site (APN 263-220-018, 263-220-009, 263-220-017 [Monther]; 263-230-002 [Clappier]; 263-220-023, 263-220-004 [HSU]; and portions of 263-220-008, 263-220-027, 263-220-028, 263-220-029 [American Legion]). The Project Area is located at the south of Bay Street and east of Old 215 Frontage Road, City of Moreno Valley, Riverside County, California. Material Culture Consulting, Inc. (MCC) was retained by E|P|D Solutions, Inc. to conduct a Phase I paleontological resource investigation of the Project Area. This paleontological resource assessment was conducted in compliance with the California Environmental Quality Act (CEQA), Public Resources Code (13 PRC) 2100, (14 CAC) 15000, Appendix G, Section J, (PRC) 2100-21177, Appendix G, (PRC) 5097.5 and guidelines in accordance with Society of Vertebrate Paleontology (2010) standards. According to these regulations and guidelines, if development of a Project has the potential to result in significant impacts to paleontological resources, a plan must be developed to mitigate those impacts to a level which is less than significant. This assessment documents the potential for encountering paleontological resources during development of this Project and provides recommendations on how to mitigate impacts to those resources. This assessment included locality and records searches, an examination of geologic maps and paleontological literature, and a pedestrian field survey.

PROJECT LOCATION AND DESCRIPTION

The Project is located in the western portion of the City of Moreno Valley, directly to east of the City boundary with the City of Riverside, comprising six parcels south of Bay Avenue and east of the Old 215 Frontage Road., located within northwestern Riverside County (Figure 1). The Project consists of nine parcels totaling approximately 11.5 acres (APNs 263-220-018, 263-220-009, 263-220-017 [Monther]; 263-230-002 [Clappier]; 263-220-023, 263-220-004 [HSU]; and portions of 263-220-008, 263-220-027, 263-220-028, 263-220-029 [American Legion])), located at the south of Bay Street and east of Old 215 Frontage Road in the City of Moreno Valley, Riverside County, California (Figures 2 and 3). The Project Area is situated north of the March Air Reserve Base and east of the Escondido Freeway (Interstate 215). Specifically, the Project Area is bounded by Bay Street to the north, Old 215 Frontage Road to the west, and private property to the west and south. Specifically, the proposed Project is located within Section 10, Township 3 South, Range 4 West on the Riverside East USGS 7.5-minute quadrangle (San Bernardino Base Meridian) (Figure 2).

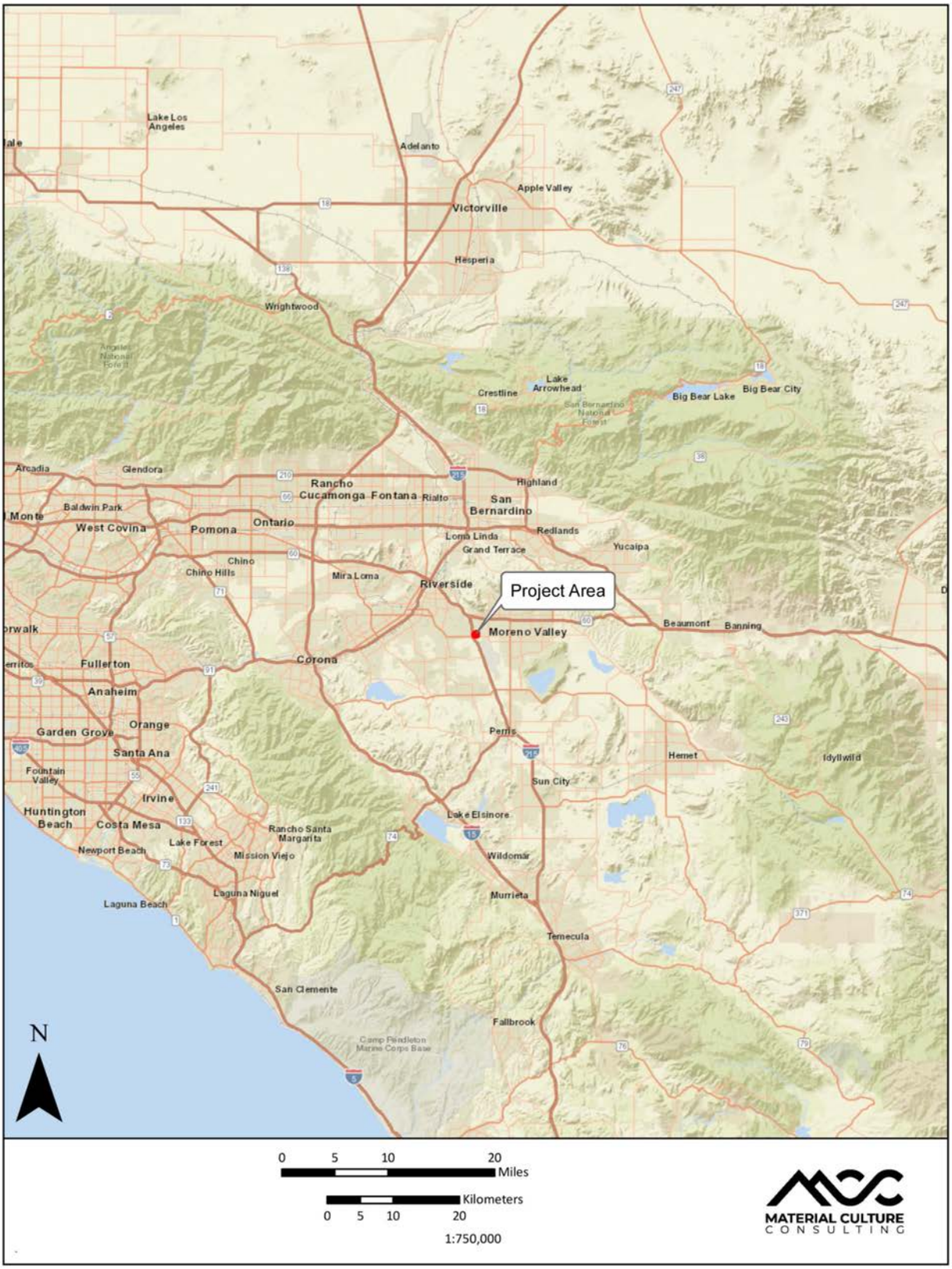
The Project includes the construction of six warehouse buildings (A-F) and associated parking lots on an approximately 11.5-acre site (APN 263-220-018, 263-220-009, 263-220-017 [Monther]; 263-230-002 [Clappier]; 263-220-023, 263-220-004 [HSU]; and portions of 263-220-008, 263-220-027, 263-220-028, 263-220-029 [American Legion]).

PROJECT PERSONNEL

Jennifer Kelly, M.S., a Qualified Riverside County Paleontologist, served as the Principal Investigator for the study. Ms. Kelly conducted the paleontological resource literature and map reviews, oversaw the field study, and prepared this report. Ms. Kelly has a M.Sc. in Geology from California State University, Long Beach. Ms. Kelly has over twelve years of experience in environmental and paleontological compliance in California (See Appendix A). Judy Cardoza, B.A., MCC archaeologist and cross-trained paleontologist, conducted the pedestrian survey. MCC Project Manager Lily Arias, M.A., provided peer-review and GIS support for the report.

ENVIRONMENTAL SETTING

The Project Area is located within the City of Moreno Valley in northwestern Riverside County, approximately 0.21 miles east of California Interstate 215. The Project Area is located within a relatively flat valley floor that is surrounded by hills and mountains and is bound by the Box Springs Mountains to the north, the Badlands to the east, and Olive Hill and associated mountains to the northeast. Elevations are approximately 439 meters (m) (1440 ft) above mean sea level (AMSL) throughout the Project Area. The region is located within the Peninsular Ranges, a northwest-southeast oriented complex of blocks separated by similarly trending faults (Norris and Webb 1978). Most geological formations found within this area are part of the Southern California Batholith, a great mass of basement igneous rocks, and alluvium sourced from the hills and mountains bordering the area. Vegetation observed within the Project Area includes invasive grasses and weeds in the central portion, highly disturbed furrowed fields in the eastern and north/northwestern portion. Non-native Eucalyptus and Pepper trees rows are present within the north-northwestern portion, with a scattered commercial properties located to the southwest and northwest and residential areas to the north, northeastern and southeastern area of the Project Area. The climate in the region is characterized as Mediterranean, with hot, dry summers and temperate, wet winters.


Project Area
Lake Los Angeles
Adelanto
Apple Valley
Victorville
Hesperia
Wrightwood
Crestline
Lake Arrowhead
Big Bear Lake
Big Bear City
Arcadia
Glendora
Rancho Cucamonga
Fontana
Rialto
Highland
San Bernardino
Baldwin Park
West Covina
Pomona
Ontario
Loma Linda
Redlands
Grand Terrace
Yucaipa
Chino
Chino Hills
Mira Loma
Riverside
Moreno Valley
Beaumont
Banning
Corona
Fullerton
Anaheim
Orange
Garden Grove
Santa Ana
Fountain Valley
Irvine
Huntington Beach
Costa Mesa
Newport Beach
Lake Forest
Rancho Santa Margarita
Mission Viejo
Laguna Niguel
Laguna Beach
Perris
Hemet
Idyllwild
Sun City
Lake Elsinore
Wildomar
Murrieta
Temecula
San Clemente
Fallbrook
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MATERIAL CULTURE CONSULTING

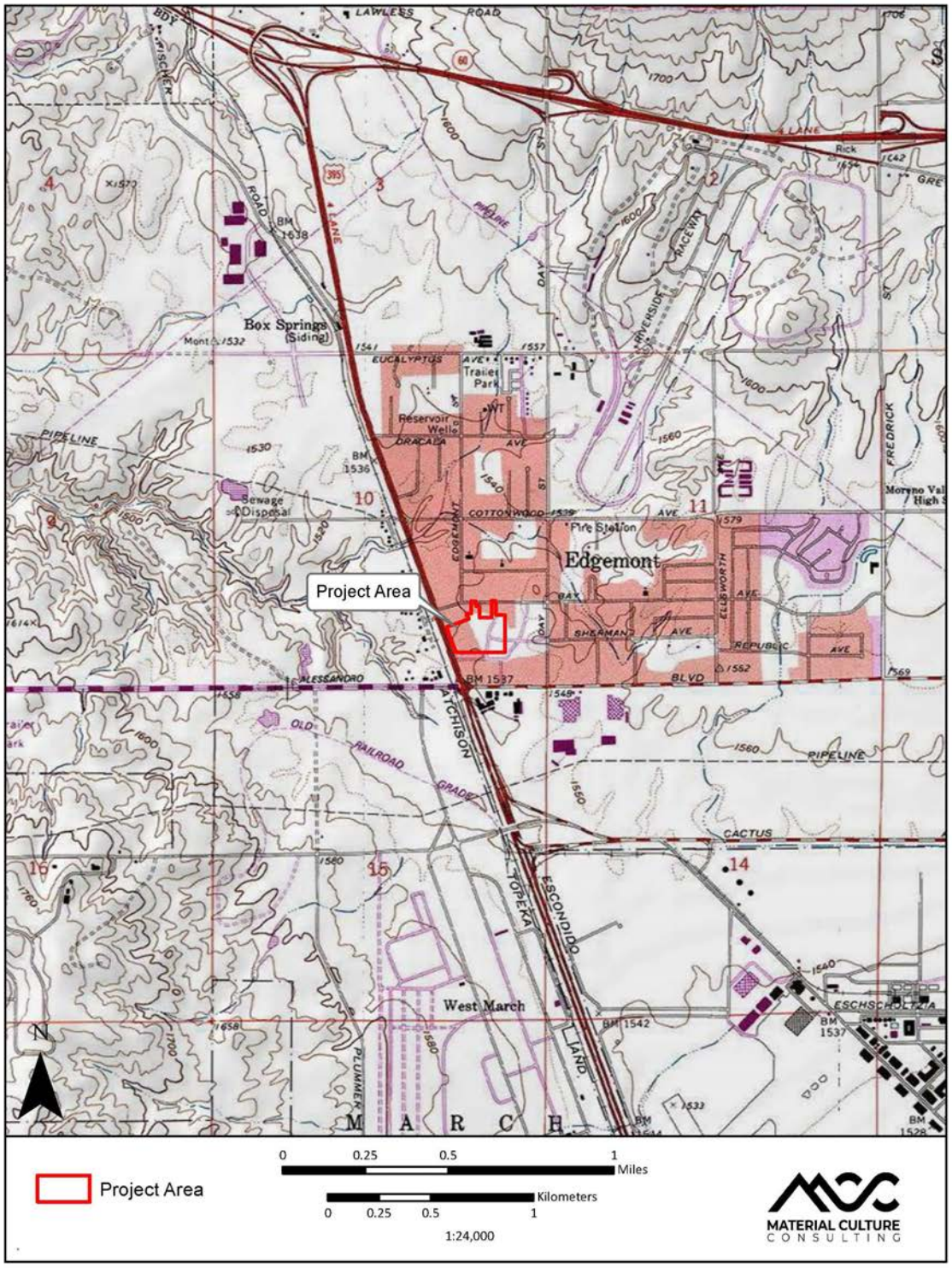

Figure 2. Alessandro and Old 215 Frontage Project Location (as depicted on Riverside East USGS 7.5 minute Quadrangle, 1:24,000**)**

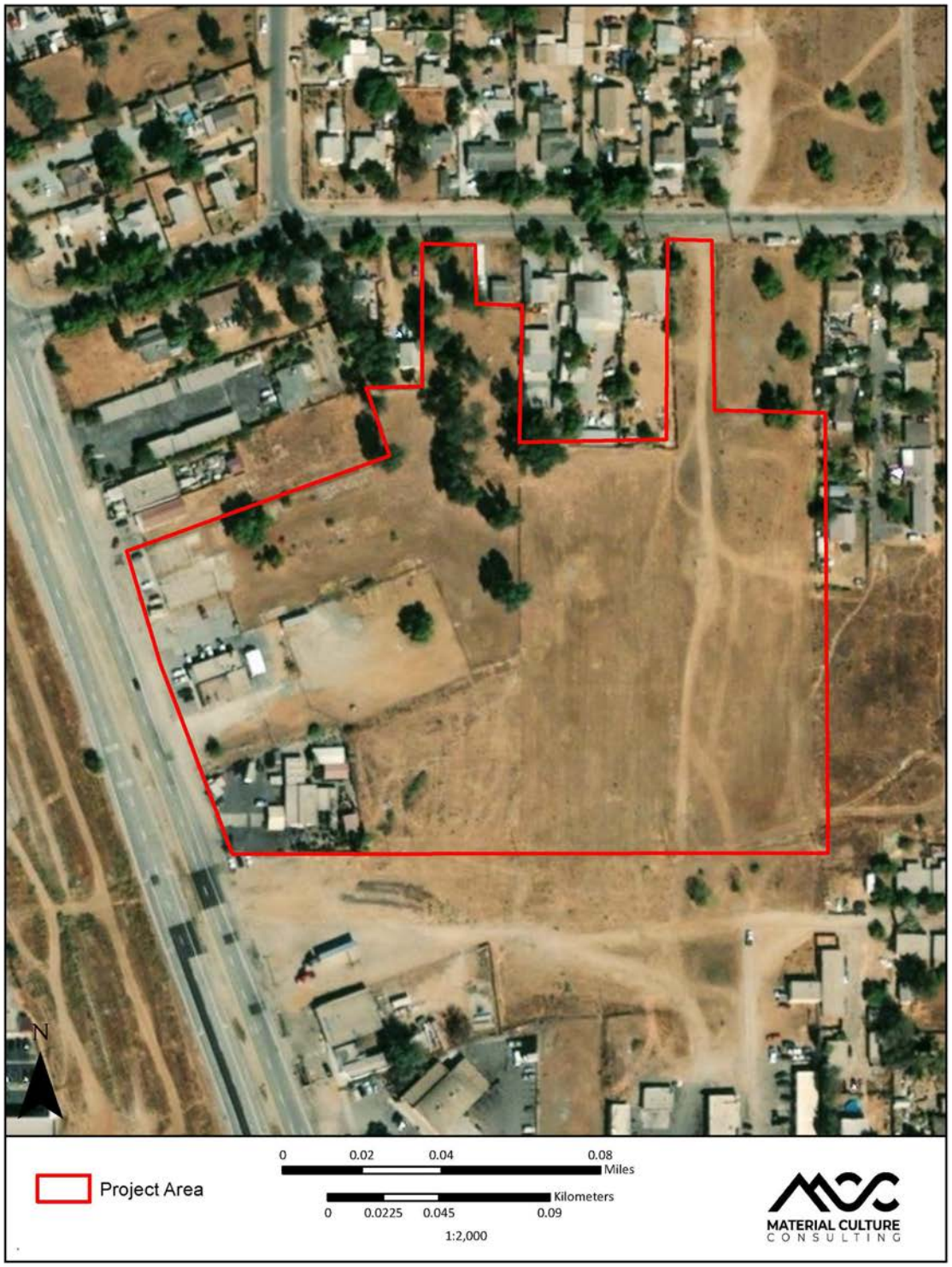

Figure 3. Alessandro and Old 215 Frontage Project Location (as depicted on aerial photograph, 1:2,000)

GEOLOGICAL CONTEXT

The Project Area lies within the *Riverside East* USGS quadrangle, which is within the geomorphic province known as the Peninsular Ranges Province, sitting near the eastern margin of the Perris Block (Kenney 1999). The Perris Block is a structurally stable, internally cohesive mass of crustal rocks bounded on the east by the San Jacinto fault zone, bounded on the west by the Elsinore and Chino fault zones, on the north by the Cucamonga fault zone (Norris and Webb 1976; Morton and Matti 1989), and on the south by a series of sedimentary basins (Morton and Matti 1989). The Project area is mapped as Quaternary alluvial deposits transported and deposited in channels, washes, and on alluvial fan surfaces, which may shallowly overlie older Quaternary alluvium (Figure 4) (Dibblee and Minch 2003). While younger Quaternary alluvial deposits have a low potential to produce significant paleontological resources, older Quaternary alluvial units have the high potential to yield significant fossil resources if encountered subsurface (LACM 2021). Older Quaternary alluvium is mapped just to the west of the Project boundary and is likely to shallowly underlie the younger alluvium mapped on the Project surface.

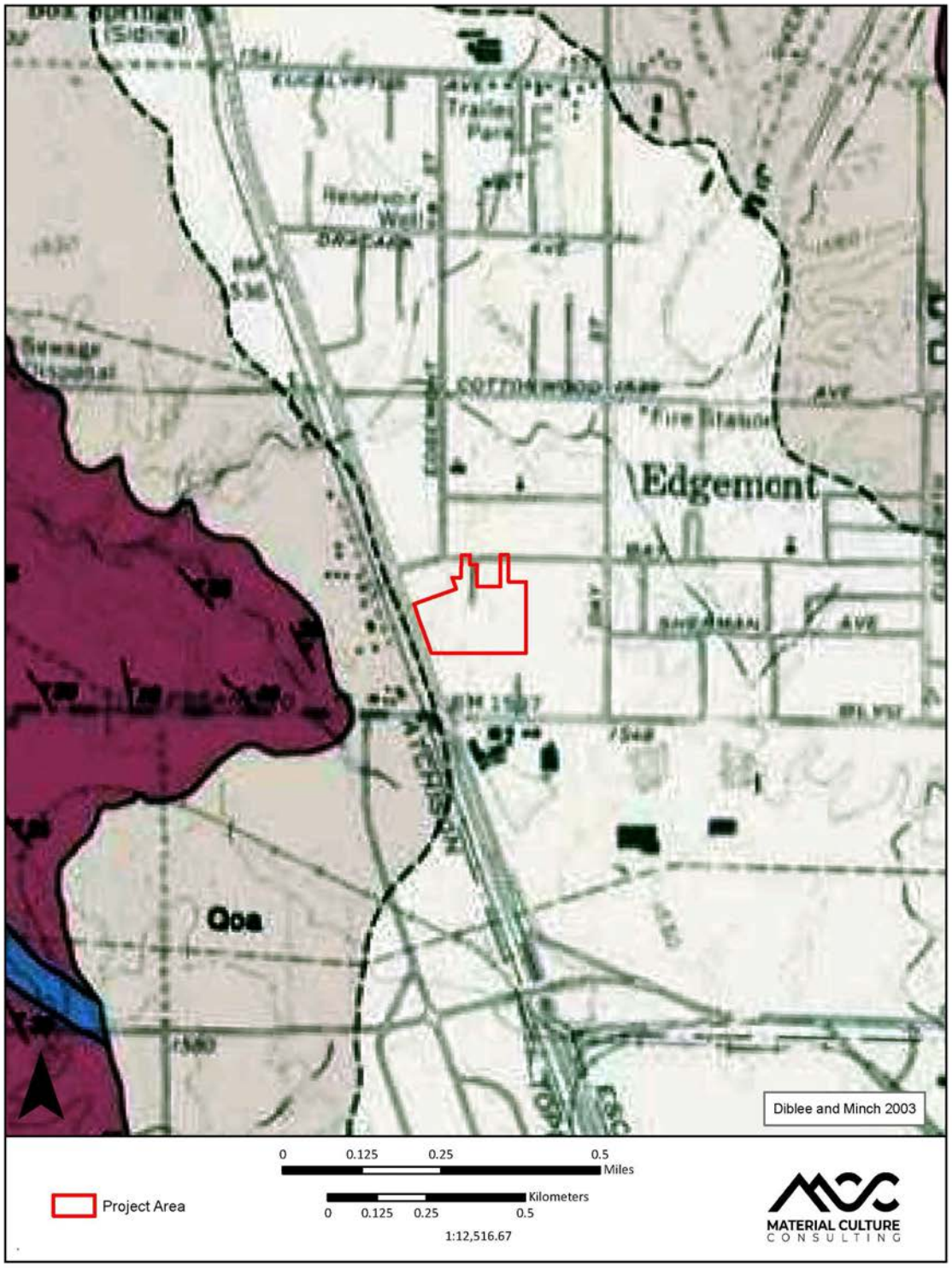

Figure 4. Geological Map of Project Area (Diblee and Minch 2003)

RESEARCH DESIGN

Paleontological resources (fossils) are the remains of prehistoric life that provide an invaluable window into the past. These remains can be bones, teeth, shells, wood or leaves, or trace fossils (including burrows and trackways). The Society for Vertebrate Paleontology (SVP) generally considers any resource greater than 5,000 years old to be a fossil (SVP 2010). Fossils are considered non-renewable resources and in California, impacts to paleontological resources must be considered pursuant to CEQA requirements for environmental reviews.

This paleontological resources assessment was conducted according to CEQA, Public Resources Code (13 PRC) 2100, (14 CAC) 15000, Appendix G, Section J, (PRC) 2100-21177, Appendix G, (PRC) 5097.5. This paleontological resources assessment was conducted to evaluate the potential existence of resources that would require a preparation of a monitoring plan and monitoring activities, in order to reduce impacts to a less than significant level.

The Riverside County Land Information System (RCLIS) overlay map defines what a significant impact on paleontological resources would be and requires monitoring of ground disturbing activities within areas designated as having High sensitivity. High sensitivity areas are mapped as either "High A" or "High B." Rock units with a “High Potential” for paleontological resources including sedimentary rock units that have an increased potential for containing significant non-renewable paleontological resources and are rock units within which vertebrate or significant invertebrate fossils have been determined to be present or likely to be present. These units include, but are not limited to, sedimentary formations which contain significant non-renewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. High sensitivity includes not only the potential for yielding abundant vertebrate fossils, but also for production of a few significant fossils that may provide new and significant (taxonomic, phylogenetic, ecologic, and/or stratigraphic) data.

The *Moreno Valley General Plan*’s (2006) Conservation Element Programs 7-6 states “in areas where archaeological or paleontological resources are known or reasonably expected to exist, based upon the citywide survey conducted by the UCR Archaeological Research Unit, incorporate the recommendations and determinations of that report to reduce potential impacts to levels of insignificance”. Additionally, the *Environmental Impact Report for City of Moreno Valley General Plan* (P&D Consultants 2006) has one mitigation measure concerning paleontological resources:

- C1. Prior to the approval of a project, the City will assess potential impacts to significant historic, prehistoric archeological, and paleontological resources, including impacts to human remains, pursuant to Section 15064.5 of the California Environmental Quality Act Guidelines. If significant impacts are identified, the City will require the project to be modified to avoid the impacts, or require measures to mitigate the impacts. Mitigation may involve monitoring, resource recovery, documentation or other measures.

METHODS

LITERATURE AND MAP REVIEW AND LOCALITY SEARCH

The literature review included an examination of geologic maps of the Project Area and a review of relevant geological and paleontological literature, including published peer-reviewed documents and previous research on the area, to determine which geologic units are present within the Project Area and whether fossils have been recovered from those geologic units elsewhere in the region. As geologic units may extend over large geographic areas and contain similar lithologies and fossils, the literature review includes areas well beyond the Project Area. The results of this literature review include an overview of the geology of the Project Areas and a discussion of the paleontological sensitivity (or potential) of the geologic units within the Project Area. Riverside County Land Information System (RCLIS), which provides a paleontological resource sensitivity map for the entire county, was consulted by MCC staff on July 19, 2021 (Figure 5). Additional sources reviewed included the University of California Museum of Paleontology (UCMP) Miocene Mammal Mapping Project (MioMap) and the Paleobiology Database (PBDB). Previous local construction-related reports were also consulted to determine if fossils were recorded from other projects nearby.

The purpose of a locality search is to establish the status and extent of previously recorded paleontological resources within and adjacent to the study area for a given project. On March 19, 2021, a locality search was conducted through the LACM in Los Angeles (Appendix B). This search identified any vertebrate localities in the LACM records that exist near the Project Area in the same or similar deposits.

PALEONTOLOGICAL RESOURCES SURVEY METHODS

The survey stage is important in a Project's environmental assessment phase to verify the exact location of each identified paleontological resource (if any), the condition or integrity of the resource, and provides invaluable information on the type of sediment present within the Project Area, which informs the assessment of paleontological sensitivity. On April 22, 2021, MCC qualified archaeologist and cross-trained paleontologist Judy Cardoza conducted a pedestrian survey of the Project Area. Special attention was paid to any graded areas and to rodent burrows that offered a better view of the underlying sediment. The purpose of a field survey is to note the sediments in the Project Area, relocate any known paleontological localities, and identify any unrecorded paleontological resources exposed on the surface. In this way, impacts to existing, unrecorded paleontological material may be mitigated prior to the beginning of ground-disturbing activities, and portions of the Project Area that are more likely to contain paleontological resources may be identified.

RESULTS

MUSEUM LOCALITY SEARCH AND LITERATURE REVIEW RESULTS

The record search results from the LACM (Bell 2021, Appendix B) did not indicate that any fossils have been found directly within the Project Area; however, there are known localities nearby from the same sedimentary deposits mapped within the Project Area (see Table 1). The closest vertebrate fossil locality from similar deposits is LACM VP 7811, a whip snake in an unknown formation, from approximately 17 miles northwest of the Project. Numerous fossil resources from similarly mapped older alluvial sediments have been identified throughout the region. Examples of fossils from these Pleistocene alluvial deposits includes Columbian mammoth (*Mammuthus columbi*), Pacific mastodon (*Mammut pacificus*), sabertooth cat (*Smilodon fatalis* ancient horse (*Equus sp*.), and many other Pleistocene megafauna. However, public documents containing previous records searches for the area indicate that significant Pleistocene-aged fossils were recovered from the construction of an Aldi logistics site approximately 7.5 miles northeast of the Project, near the intersection of Redlands Blvd. and Eucalyptus Ave. Fossils from this locality were recovered from 11 to 13 feet below ground surface in an area mapped as Holocene and late Pleistocene young alluvial fan deposits (Morton and Matti 2001). Reported fossils from this locality include ground sloth *(Megalonyx jeffersonii),* lamine camel *(Hemiauchenia sp.),* and horse *(Equus sp.*) (Rincon 2019).

Table 1. LACM Paleontological Resources Record Search Results

Locality Number	Location	Formation	Taxa	Depth
LACM VP 7811	W of Orchard Park, Chino Valley	Unknown formation (eolian, tan silt; Pleistocene)	Whip snake (Masticophis)	9-11 feet bgs
LACM VP 1207	Hill on east side of sewage disposal plant; 1 mile N-NW of Corona	Unknown formation (Pleistocene)	Bovidae	Unknown
LACM VP 6059	Overflow area just east-southeast of Lake Elsinore	unknown formation (Pleistocene)	Camel family (Camelidae)	Unknown
LACM IP 437	West side of Castile Canyon, north of the Soboba Indian Reservation	unknown formation	Invertebrates – insect (Sobobapteron kirkbaye), brachiopod (Terebratalia hemphili)	Unknown

Key: VP: vertebrate paleontology; IP: invertebrate paleontology; bgs: below ground surface

The RCLIS GIS database has the Project Area mapped as High B (Figure 5). High B indicates a high potential for yielding an abundant vertebrate fossil fauna, in addition to potential production of a few significant fossils that may provide new and significant data (RCLIS 2021). Fossils are likely to be encountered at or below 5 feet of depth and may be impacted by construction activities.

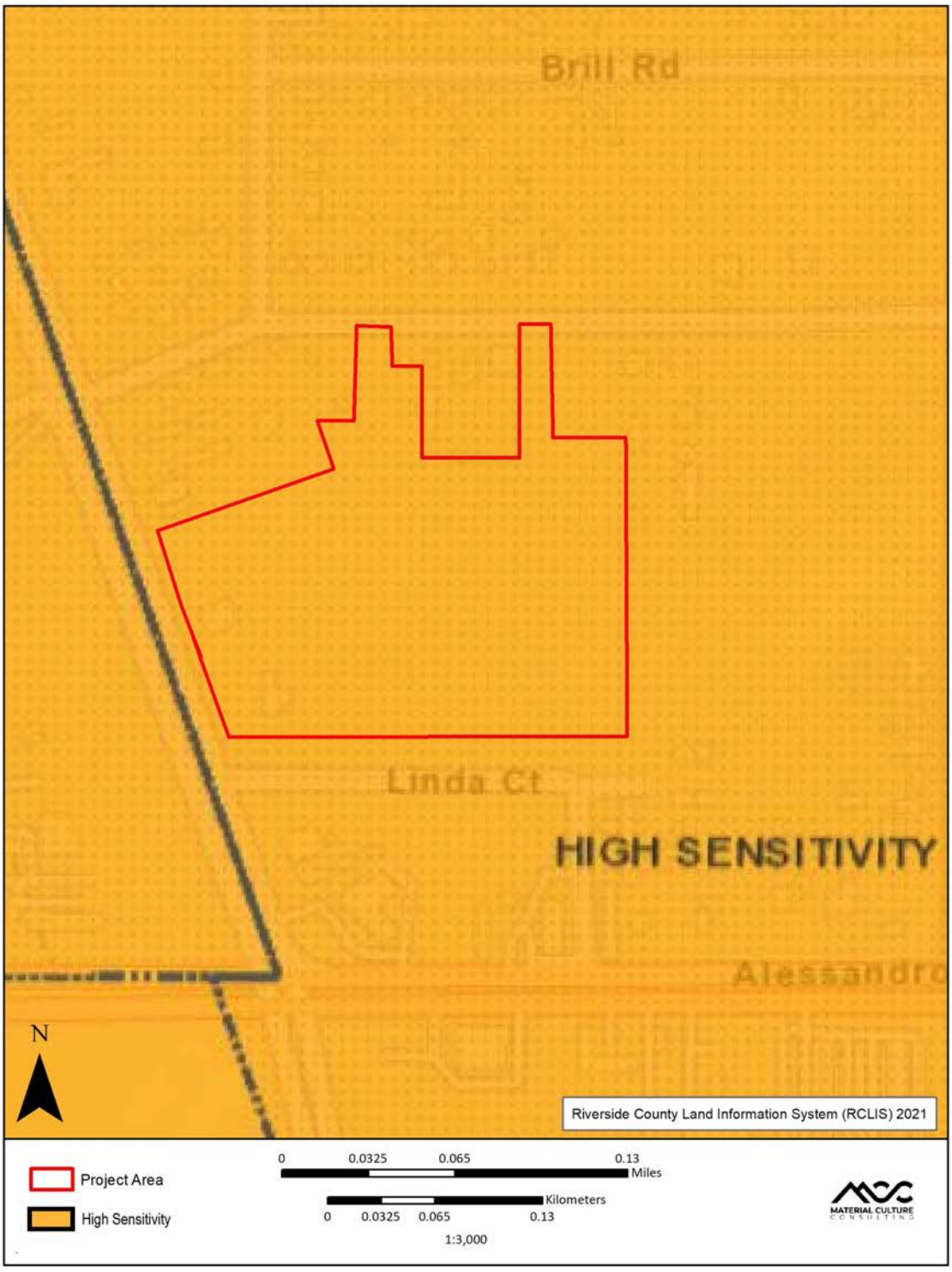

Figure 5. RCLIS Sensitivity Overlay of the Alessandro and Old 215 Frontage Project Area, Orange Indicates High Sensitivity

PALEONTOLOGICAL FIELD SURVEY RESULTS

An intensive level pedestrian survey was conducted of the Project Area (APN 263-220-018, 263-220-009, 263-220-017, 263-230-002, 263-220-023, 263-220-004, and portions of 263-220-008, 263-220-027, 263-220-028, 263-220-029) of the Project Area on April 22, 2021. The southeastern quarter of parcel 263-230-002 was surveyed at a reconnaissance level due to aggressive animal presence that rendered that half inaccessible. During the initial survey, conditions were good and ground visibility varied from very poor (less than 10%) to excellent (approximately 80%). Portions of the Project Area have been previously disturbed and since been overgrown with vegetation obstructing ground surface visibility. Observed vegetation included tall, dry grasses, brush, thistle, wildflowers and non-native Eucalyptus and Pepper trees. Soil, where exposed, in the Project Area consisted of brown silty loam with pebble-sized subangular inclusions of granitic material. Modern refuse was observed throughout the Project Area. The Project Area had uneven surfaces as previous plough and tractor activities left upturned rows, with no soil profiles or deep cuts exposed. Disturbances in the Project area include modern refuse, bioturbation, road, active commercial properties, and grading activities. No paleontological resources were observed during the survey. Representative photos of the area are found below.

Figure 5. Project Overview from southwest corner towards the central parcel of the APE, facing east.

Figure 6. Dirt road bisecting central and east parcels, view to the north.

Figure 7. Representative photograph of disturbed soils as observed in the northwest parcel, plan view

Figure 8. Representative photograph of disturbed soils in east/southeast parcel, plan view

Figure 9. Overview of the central parcel, view to the south.

SUMMARY AND RECOMMENDATIONS

MCC conducted a Phase I paleontological resource assessment of the Project Area that included fossil locality records searches, literature reviews, and an intensive pedestrian survey covering the majority of the 11.5 acres. No significant paleontological resources were identified within the Project Area during the locality searches or field survey. However, there are known fossil localities within the City of Moreno Valley that have produced significant paleontological resources within sedimentary deposits that are also mapped within the Project Area. The uppermost layers of soil within the Project Area consist of younger alluvial deposits that may shallowly overlie older, more paleontologically sensitive sediments. In addition, the Project Area is mapped in RCLIS as High B Sensitivity, which is based on the presence of geologic formations or mapped rock units that are known to contain (or have the correct age and depositional conditions to contain) significant paleontological resources at depths below 5 feet.

RECOMMENDED MITIGATION

Based on the results of the Phase I paleontological resource assessment, the proposed Project Area is considered to have moderate-to-high sensitivity for the potential to impact paleontological resources during ground-disturbing construction activities in undisturbed sedimentary deposits. MCC recommends preparation of a Paleontological Resource Impact Management Plan (PRIMP) prior to construction excavation, in order to mitigate any potential impact to non-renewable fossil resources to a less-than-significant level. It is recommended that a professional paleontologist be hired to oversee monitoring and the preparation of a PRIMP. At a minimum, the PRIMP should include the following items:

- A trained and qualified paleontological monitor should perform full-time monitoring of any excavations on the Project that have undisturbed native sediments below 4 ft in depth. The monitor will have the ability to redirect construction activities to ensure avoidance of adverse impacts to paleontological resources.

- The Project paleontologist may re-evaluate the necessity for paleontological monitoring after examination of the affected sediments during excavation, with approval from County and Client representatives.

- Any potentially significant fossils observed shall be collected and recorded in conjunction with best management practices and SVP professional standards.

- Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

- A report documenting the results of the monitoring, including any salvage activities and the significance of any fossils, will be prepared and submitted to the appropriate County personnel.

CERTIFICATION: I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: Signature: _____07/20/2021_____

Name: Jennifer Kelly, MSc., Geology
Riverside County Qualified Paleontologist

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