

APPENDIX C: PHASE I CULTURAL RESOURCES ASSESSMENT



Submitted to:

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CULTURAL RESOURCES ASSESSMENT

Moreno Valley Kia Dealership

City of Moreno Valley, Riverside County, California



**PHASE 1 CULTURAL RESOURCES ASSESSMENT:
CAR PROS KIA PROJECT, THE CITY OF MORENO VALLEY,
RIVERSIDE COUNTY, CALIFORNIA**

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MCC Project Number: 20190304

Type of Study: Cultural resources assessment

Cultural Resources within Area of Potential Impact: None

USGS 7.5-minute Quadrangle: Sunnymead, Section 2 of Township 3 S, Range 3 W

APN(s): 488-390-015 and 488-390-016

Survey Area: Approx. 6.3 acres

Date of Fieldwork: March 1, 2019

Key Words: Archaeology, CEQA, Phase I Survey, Negative Cultural Result, Riverside County

MANAGEMENT SUMMARY

Car Pros Automotive Group proposes the construction of a new automotive commercial complex, called Kia Moreno Valley (Project). The proposed Project consists of two parcels totaling approximately 6.3 acres (APN 488-390-015 and 488-390-016), located at the intersection of Auto Mall Drive and Moreno Beach Drive in the City of Moreno Valley, Riverside County, California. The proposed Project consists of construction of a sales and service facility building which will include a service reception, a parts receiving location and multiple vehicle display areas. Material Culture Consulting, Inc. (MCC) was retained by E|P|D Solutions, Inc. to conduct a Phase I cultural resource investigation of the Project Area. These assessments were conducted in accordance with the California Environmental Quality Act (CEQA), and included cultural records searches, a search of the Sacred Lands File (SLF) by the Native American Heritage Commission (NAHC), outreach efforts with 15 Native American tribal representatives, background research, and a pedestrian field survey.

Sonia Sifuentes, M.Sc., RPA, MCC Archaeologist, conducted a search of the California Historical Resource Information System (CHRIS) on February 8, 2019 at the Eastern Information Center (EIC), located on the campus of University of California, Riverside. The cultural resources search identified 35 cultural resources investigations which have been previously conducted within a 1-mile radius buffer around the Project Area, with a total of six of these studies either intersecting or adjacent to the Project Area. A total of 55 previously recorded cultural resources lie within a 1-mile buffer of the Project Area. Of these 55 cultural resources, five resources are located within ¼-mile of the Project Area, all of which are prehistoric bedrock milling features, and 21 resources are located within 1/2-mile of the Project Area, which are also mostly bedrock milling features. A review of historical aerial photographs and maps indicate that minimal disturbance occurred prior to 1970s. By the mid-1990s, development around the Project Area and disturbances within the Project Area increased. The SLF search conducted by the NAHC did not identify the presence of Sacred Lands or Tribal Cultural Resources. The NAHC provided contact information for 15 Native American tribal representatives for outreach efforts. MCC sent letters on February 8, 2019 to all 23 contacts, requesting any information related to cultural resources or heritage sites within or adjacent to the Project Area. Additional attempts by email or phone call were made on February 25 and March 15, 2019. As a result of this outreach effort, MCC received responses and recommendations from several Native American groups, however no specific information was shared regarding presence of Tribal Cultural Resources within the Project Area. The pedestrian survey of the Project Area was conducted on March 1, 2019 by Julia Carvajal, MCC Archaeologist. During the course of fieldwork, survey conditions were good and ground visibility varied from very poor (less than 10 percent) to excellent (approximately 100%) throughout the 6.3-acre Project Area due to combination of graded areas and portions with dense overgrowth of brittle bush, grasses and other weeds. A homeless encampment was located in the Southeast corner and this area was not surveyed at this time. No cultural resources were identified during the survey.

Based on the above findings, the probability of encountering cultural resources within the Project Area is considered low in previously graded areas to moderate where ground visibility was lacking. MCC recommends no further mitigation measures are needed for the duration of the Project. While we do not recommend additional mitigation prior to Project implementation, we do recommend setting a plan in place to expediently address inadvertent discoveries and human remains, should these be encountered during construction activities.

A copy of this report will be permanently filed with the EIC at University of California Riverside, Riverside. All notes, photographs, correspondence and other materials related to this Project are located at Material Culture Consulting, Inc located in Pomona, California.

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INTRODUCTION

Car Pros Automotive Group proposes the construction of a new automotive commercial complex, called Kia Moreno Valley (Project). The proposed Project consists of two parcels totaling approximately 6.3 acres (APN 488-390-015 and 488-390-016), located at the intersection of Auto Mall Drive and Moreno Beach Drive in the City of Moreno Valley, Riverside County, California. The proposed Project consists of construction of a sales and service facility building which will include a service reception, a parts receiving location and multiple vehicle display areas. Material Culture Consulting, Inc. (MCC) was retained by E|P|D Solutions, Inc. to conduct a Phase I cultural investigation of the Project in accordance with the California Environmental Quality Act (CEQA). This assessment was conducted pursuant to all applicable State of California regulations regarding cultural resources, as well as guidelines established by the City of Moreno Valley and the County of Riverside. According to these regulations and guidelines, if development of a Project has the potential to result in significant impacts to cultural resources, a plan must be developed to mitigate those impacts to a level which is less than a significant. This assessment documents the potential for encountering cultural resources during development of this Project and provides recommendations on how to mitigate impacts to those resources. The lead agency for this Project is the City of Moreno Valley.

PROJECT LOCATION AND DESCRIPTION

The Project is located in the City of Moreno Valley, located within northwestern Riverside County (Figure 1). The Project consists of two vacant parcels totaling approximately 6.3 acres (APNs 488-390-015 and 488-390-016), located at the intersection of Auto Mall Drive and Moreno Beach Drive in the City of Moreno Valley, Riverside County, California (Figures 2 and 3). The Project Area is situated northeast of the Moreno Peak and south of the Moreno Valley highway (State Route 60). Specifically, the Project Area is bounded by Auto Mall Drive to west/northwest, Moreno Beach Drive to the south, Pettit Street to the north, and a vacant lot east. Specifically, the proposed Project is located within Section 2, Township 3 South, Range 3 West on the Sunnymead USGS 7.5-minute quadrangle (San Bernardino Base Meridian) (Figure 2). The proposed Project is a Kia vehicle sales and service facility with a car wash.

PROJECT PERSONNEL

Tria Belcourt, M.A., RPA, President of Material Culture Consulting Inc., served as the Project Manager and Principal Archaeologist for the study. Ms. Belcourt coordinated the records searches and performed editorial review of this report. Belcourt is a Registered Professional Archaeologist (RPA) with a M.A. in Anthropology from the University of Florida, a B.A. in Anthropology from the University of California at Los Angeles with over twelve years of experience in California archaeology (See Appendix A). Sonia Sifuentes, M.Sc, RPA, conducted the cultural resource records search and provided co-authorship of this report. Julia Carvajal, B.S., conducted the pedestrian survey, provided co-authorship and technical peer review for this report, and created the maps for the report.

ENVIRONMENTAL SETTING

The Project Area is located within the City of Moreno Valley city limits in northwestern Riverside County, approximately 0.43 mile south of California State Route 60. Bounded by the Box Springs Mountain to the north, the Badlands to the east, and Lake Perris Recreation Area and associated mountains to the south, the Project Area is located within a relatively flat valley floor that is surrounded by hills and mountains. Elevations are approximately 533 meters (m) (1748 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 comprised the

Southern California Batholith, a great mass of basement igneous rocks. Vegetation observed within the Project Area include invasive grasses and weeds and brittle bush observed along the southern portion. Non-native landscaping is present within the surround region, with a residential and commercial development located to the South-southwest and Northwest of the Project Area. The climate in the region is characterized as Mediterranean, with hot, dry summers and temperate, wet winters.

The Project Area lies 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, and 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 within surficial Quaternary alluvial fan deposits to the east and within the southwestern-most portion of the Project Area is early Pleistocene alluvial fan deposits with exposures of Cretaceous tonalite south of the Project's southern boundary (Morton and Matti 2001).



Figure 1. Car Pros Kia Project Vicinity (1:250,000)

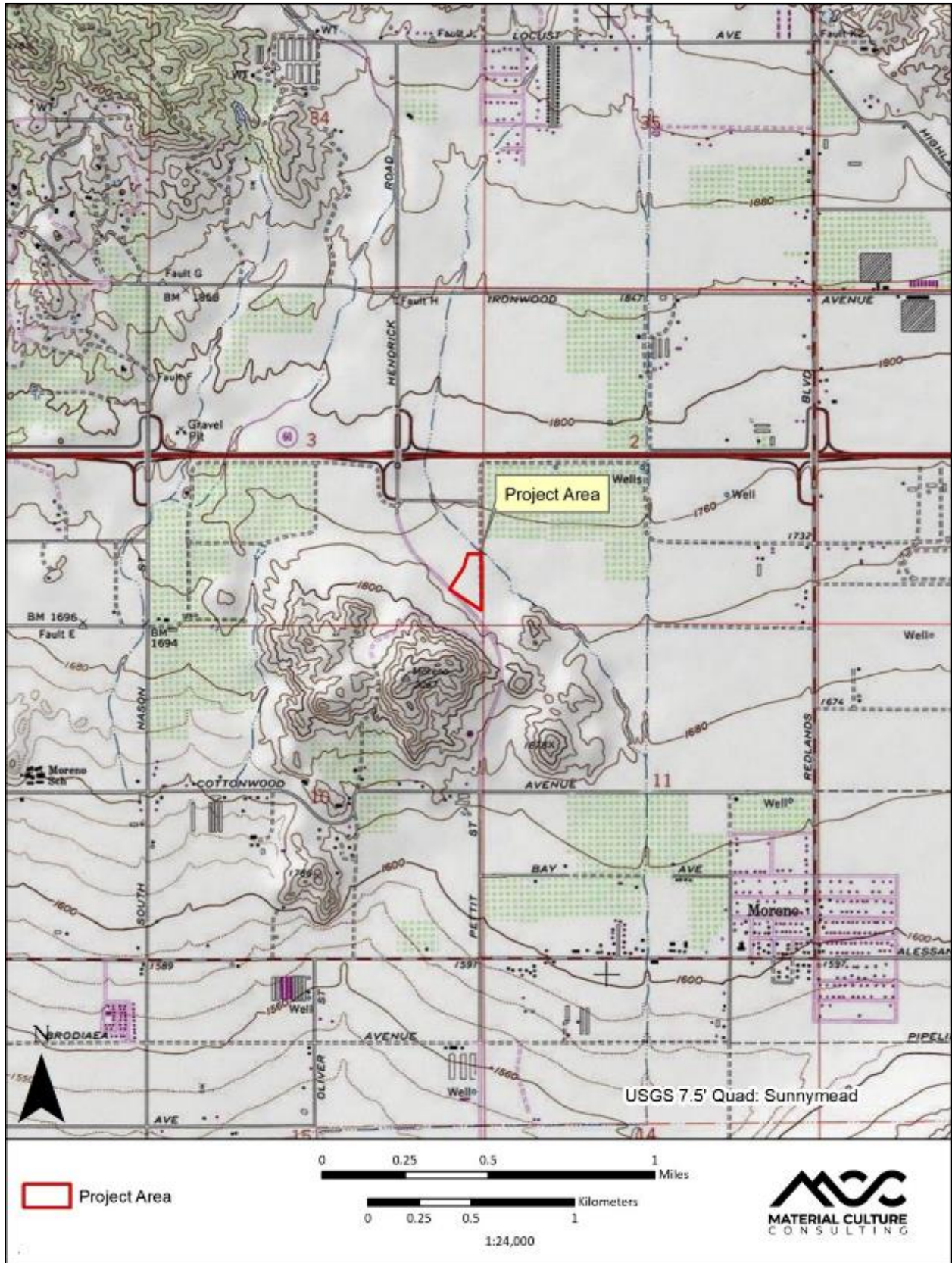


Figure 2. Car Pros Kia Project Location (as depicted on Sunnymead USGS 7.5-minute Quadrangle, 1:24,000)

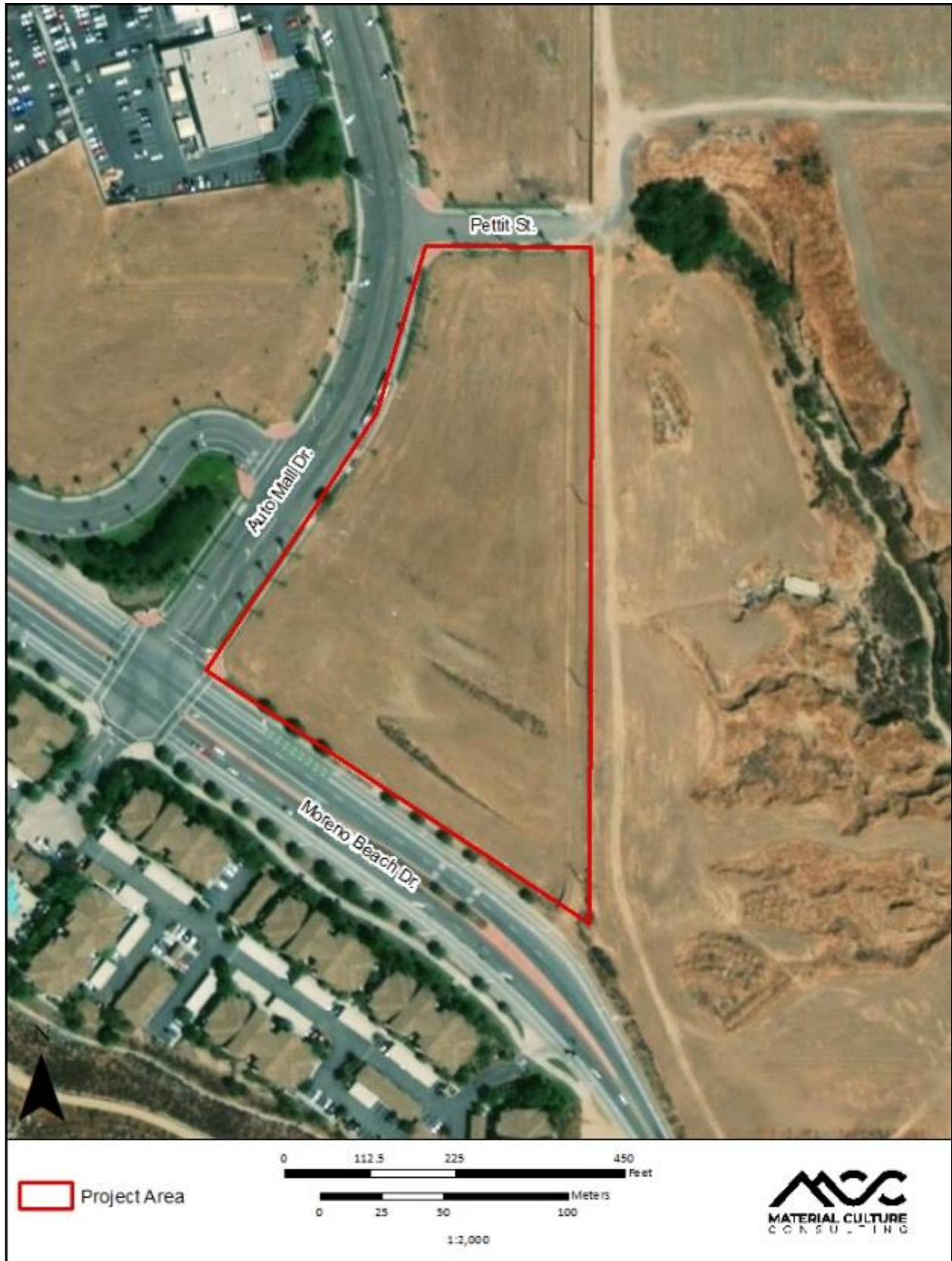


Figure 3. Car Pros Kia Project Area (as depicted on aerial photograph, 1:2,000)

PREHISTORIC CONTEXT

There is no specific model of early human occupation offered within the Moreno Valley region. The earliest sites known in the area are attributed to the San Dieguito culture, which consists of a hunting culture with a flaked stone tool industry (Warren 1967). The material culture related to this time included scrapers, hammer stones, large flaked cores, drills, and choppers, which were used to process food and raw materials. These types of early sites are more likely to be found along ancient lake terraces. Most evidence of this early occupation is located further south-southwest and currently there is no evidence of human occupation within the Moreno Valley region prior to about 2,300 years ago (P&D Consultants 2006).

Around 8,000 years ago, subsistence patterns changed, resulting in a material complex consisting of an abundance of milling stones (for grinding food items) with a decrease in the number of flaked stone tools. The material culture from this time period includes large, bifacially worked dart points and grinding stones, handstones and metates. Archaeologists initially designated this period as the "Millingstone Horizon" (Wallace 1955). Later, the Millingstone Horizon was redefined as a cultural tradition named the Encinitas Tradition (Warren 1967) with various regional expressions including Topanga and La Jolla. Use of this classification system by archaeologists has varied as some adopted a generalized Encinitas Tradition without regional variations, while others continued to use Millingstone Horizon, and still others used Middle Holocene (the geologic time period) to indicate this observed pattern (Sutton and Gardner 2010:1-2). Recently, this generalized terminology was criticized by Sutton and Gardner (2010) as suppressing the identification of cultural, spatial, and temporal variation, as well as the movement of peoples throughout space and time. It is these factors that are believed to be critical to an understanding of prehistoric cultural adaptation and change in this portion of southern California (Sutton and Gardner 2010:1-2).

The Encinitas Tradition characteristics include abundant metates and manos, crudely-made core and flake tools, bone tools, shell ornaments, and very few projectile points, indicating a subsistence pattern focused on hunting and gathering a variety of floral resources. Faunal remains vary by location but include marine mammals, fish, and shellfish, as well as terrestrial animals, reptiles, and birds (Sutton and Gardner 2010:7). The Encinitas Tradition has been redefined to have four patterns (Sutton and Gardner 2010: 8-25). These include the Topanga Pattern in coastal Los Angeles and Orange counties, the La Jolla Pattern in coastal San Diego County, and the Sayles or Pauma cultures in inland San Diego County extending into western Riverside County, where the Project is located. At approximately 3,500 years ago, Pauma groups in the general Project vicinity adopted new cultural traits which transformed the archaeological site characteristics - including mortar and pestle technology. This indicated the development of food storage, largely acorns, which could be processed and saved for the leaner, cooler months of the year.

At approximately 1,500 years before present, bow and arrow technology started to emerge in the archaeological record, which also indicates new settlement patterns and subsistence systems. The local population retained the subsistence methods of the past, but incorporated new materials into their day to day existence, as evidenced by the archaeological record. The Palomar Tradition is attributed to this time, and is comprised of larger two patterns: the Peninsular Pattern in the inland areas of the northern Peninsular Ranges (e.g., San Jacinto and Santa Rosa mountains) and the northern Coachella Valley (Sutton 2010), and the San Luis Rey pattern of the western Riverside region. Archaeological sites from this time period are characterized by soapstone bowls, arrowhead projectile points, pottery vessels, rock paintings, and evidence of cremation sites. The shift in material culture assemblages is largely attributed to the emergence of Shoshonean (Takis-speaking) people who entered California from the east. Recent investigations at the Eastside Reservoir Project refines the chronology for the past 1500 years into four stages: Saratoga Springs (1500-750 BP), Late Prehistoric (750-410 BP), Protohistoric (410-180 BP), and Historic (post-180 BP). This research shows a large number of semi-residential sites during the

Medieval Climatic Anomaly at the end of the Saratoga Springs period which ended by the Late Prehistoric period (Applied Earthworks 2001). The increased use of the area suggests that the area may have had a more favorable environment than in surrounding regions.

ETHNOGRAPHIC CONTEXT

The Project Area has historically been situated between two Native American territories: the Luiseño people and the Cahuilla people. Migration of Shoshone peoples from the Great Basin into the desert and coastal Southern California regions occurred approximately 1000 to 600 years B.P. Both the Cahuilla and Luiseño ethnographic groups derived from this migration.

Cahuilla

The Cahuilla territory was bounded by the San Bernardino Mountains to the north, the Orocochia Mountains to the east, the Santa Ana River/the San Jacinto Plain and the eastern portion of Palomar Mountains to the west, and Borrego Springs and the Chocolate Mountains to the south (Bean 1978). The Project Area falls within the western region of the tribe's traditional territory, denoted by the San Gorgonio Pass. The Cahuilla existed within the most geographically diverse region, having exploited more than 500 native and non-native plants (Bean and Saubel 1972). The Cahuilla spoke a language that belongs to the Cupan group of the Takic subfamily of the Uto-Aztecan language family, a language family that includes the Shoshonean groups of the Great Basin (Bean and Shippek 1978).

The prehistoric Cahuilla occupation is characterized by structures within permanent villages that ranged from small brush shelters to dome-shaped or rectangular dwellings. Villages were situated near water sources, in the canyons near springs, or on alluvial fans at man-made walk-in wells (Bean 1972). There appears to be slight difference in subsistence tools between the Desert, Pass, or Mountain Cahuilla groups. The Desert Cahuilla used deep, wooden mortars with a long pestle whereas San Gorgonio Pass Cahuilla utilized shallower mortars with basketry rims (Kroeber 1908: 40, 43). Cahuilla granaries were usually raised on pole platforms two to four feet high, which resembled birds' nests, and were used to store mesquite (Kroeber 1908: 42).

In comparison with other Southern California tribes, the Cahuilla appear to have had a lower population density and a less rigid social structure. The Cahuilla are patrilineal, with closely related patrilineages that share an assumed common ancestor which is important socially and ceremonially (Hudlow 2007). The office of lineage leader, also known as a *né̄t*, directed subsistence activities, settled conflicts, represented the clan regionally and was responsible for correct performances of ceremonies, with the official role of the chief passed from father to eldest son (Bean 1978; Hudlow 2007).

Initial contact with European explorers with the Cahuilla most likely occurred during the expedition of Juan Bautista de Anza in 1777 (Napton and Greathouse 1982). The presence of the San Gabriel Mission in the early 1800s led to more contact via baptisms (Napton and Greathouse 1982). It also led to the Native Americans moving away from traditional habitation sites to separate themselves from the influence of the Mission (Brumgardt 1977). The Cahuilla traditions may have been relatively stable until mission secularization in 1834, due to the policy of the Catholic Mission fathers, or *padres*, to maintain imported European traditional style settlement and economic patterns (Bean and Shippek 1978). After 1877, when the United States government established Indian reservations in the region and religious missionaries began conversion of the Native American populations in the region, traditional cultural practices were prohibited. Presently, the Cahuilla reside in nine separate reservations in Southern California, located in Imperial, Riverside and San Diego counties (Bean 1978).

Luiseño

The Spanish name Luiseño was used to identify Native Americans who were associated with the Mission San Luis Rey, with the Luiseño most likely had no known native term for their own nationality (Bean and Shipek 1978). Extensive research has been accumulated that gives detailed accounts of the Luiseño (DuBois 1908, Sparkman 1908, Kroeber 1976, White 1963, and Bean and Shipek 1978). At the time of these ethnographies, the Luiseño maintained a sophisticated political organization structure, and their lands extended from western San Jacinto to the Pacific Ocean along several major waterways, including Temecula, Santa Margarita, and San Luis Rey Rivers (Bean and Shipek 1978). Neighboring tribes included the Cahuilla to the east, the Serrano to the north, and the Gabrielino to the west. Each of these groups are part of the same Uto-Aztecan linguistic group and are Takic-speakers. The boundaries for territories fluctuate as new information evolves in ethnographic research, so there is a likelihood that there was quite a bit of overlap between groups over time as well.

The Luiseño organized themselves according to family groups or lineages, rather than forming exogamous moieties. Each lineage occupied land that they held in common, and they lived socially and politically separately from others (Bean and Shipek 1978). They typically resided in villages near reliable water sources and maintained special purpose camps close to the main villages. In the springtime, families would replenish food supplies by gathering local fruit, seeds, bulbs and roots. In the fall, families would move into the upland areas to gather acorns, prickly pear, toyon berries, and yucca. The Luiseño territory contained several species of oak that produced edible acorns. Acorns were stored and processed as needed by breaking the shell, grinding the meat into a powder, and leaching the tannic acid from the nut by using water. A porridge was made from the leached nuts and cooked with water using hot stones in baskets. The Luiseño used a wide variety of tools, including manos and metates, bone and shellfish hooks, stone and shell ornaments, bone awls, wooden throwing sticks, hammer stones, handstones, pestles, mortars, and drills, which are evident in late Prehistoric archaeological sites. Presently, there are six federally recognized Luiseño tribes with associated reservations within Southern California.

HISTORIC CONTEXT

In 1769, Spanish settlers began to enter and colonize Alta California. Once the first European exploration of California occurred, the region underwent immense change. As early as 1827, Anglo-Americans were migrating into Southern California. In the decades to come, California would be taken by the United States with the close of the Mexican-American War and subsequent events such as the Civil War and California Gold Rush would continue to shape the history of California.

Spanish Period (1769 to 1821) to Mexican Period (1821 to 1848)

The Spanish period began in 1769 with Captain Gaspar de Portolá's land expedition and ended in 1821 with Mexican Independence. During the Spanish Period, the influence of San Luis Rey Mission (1798) was apparent throughout the surrounding regions, with much of the area used for cattle grazing. At its peak, the Mission controlled multiple ranches and claimed control over what is now western Riverside County and northern San Diego County. However, after control of the area shifted to Mexico, secularization began throughout the area and the missions and their associated ranches began to decline. The Mexican government proceeded to push settlements of Mexican populations from the south by deeding large grants to individuals who promised to employ settlers. Small villages were established on some ranchos, while small towns appeared in areas between ranchos. However, the area that is now known as Moreno Valley remained largely uninhabited.

American Period (1848 to present)

The Gold Rush of 1849 would see tremendous influx of Americans and Europeans flooding into Southern California. The passing of the Homestead Act of 1862 increased the influx of settlers within the region. Eventually, Riverside County was settled by homesteaders and farmers, and quickly became a diversified agricultural area with citrus, grain, grapes, poultry, and swine being the leading commodities. This influx of settlers led to population pressures and increased conflicts with the local indigenous groups. The passage of the Act for the Governance and Protection of Indians in 1850 further degraded the position of the Luiseño and Cahuilla. By 1877, The Cahuilla were moved to reservations in a checkerboard pattern throughout the Palm Springs and Coachella Valleys in Riverside County (Napton and Greathouse 1982) which broke up reservation land into discontinuous patchwork pieces, restricting access by the tribe to sacred lands and traditional gathering places. The Moreno Valley area remained unclaimed public land until 1870, when a large tract of over 13,400 acres were purchased from the U.S. government in a single transaction (Tang and Hogan 2013).

Historical Context of the Project Region

Development of the City of Moreno Valley began during the late 19th century. In 1883, Frank E. Brown ventured from Redlands into the Moreno Valley region and secured a large acreage that were platted into ten-acre tracts (Ellis 1912). This attracted settlers and farmers into the region and the Town of Moreno was established in Brown's honor in 1890 (Ellis 1912; P&D Consultants 2006). However, due to water conflicts and litigations that ultimate went in favor of the City of Redlands, a period of drought forced the failure of most farmers in the area and lead to an exodus from the Town of Moreno to other closer locations like Riverside, dubbing the area and town "The Valley/Town on Wheels" (Ellis 1912; Ghori 2014; City of Moreno Valley 2018).

In 1918, the construction of a military training airfield in the area brought in new community growth. Located 3.21 miles southwest of the Project Area, it was originally called the Alessandro Aviation Field, with its official name changed to March Air Field in honor of an Army pilot who had died during a training crash (Ghori 2014). First encompassing 640 acres of land, March Air Field grew to encompass more than 7,000 acres, with the base supporting 85,000 troops at its height of activity (City of Moreno Valley 2018). In 1996, March was realigned as an Air Reserves Base and is still currently active.

From the late 1950s to the late 1980s, the Riverside International Raceway operated within Moreno Valley. Established by Rudy Cleye, it was considered a dangerous track and circuit changes occurred in 1969 (Racing Circuits 2018). It hosted many prominent races, including NASCAR championships (Ghori 2014). By 1989, the land the track was on was sold to create housing and a shopping mall, located 4.5 miles northwest of the Project Area (Racing Circuits 2018). By 1984, the communities of Edgemont, Sunnymead, and Moreno voted to incorporate after prior failed efforts, and the City of Moreno Valley was established (City of Moreno 2018).

RESEARCH DESIGN

The objectives of an archaeological assessment are to locate, interpret, and evaluate the indications of past human activities within the study area. The indicators of such activities are represented by cultural resources, and can consist of many different types of materials – stone tools, historic neighborhoods, historic-era can scatters, village sites, food waste, tool manufacturing waste, trails, stone alignments, petroglyphs, hearths, or human skeletal remains. All of these types of resources are known to exist within the general Project region. The scope of this study is to identify and evaluate the significance of observable cultural resources, should they exist within the Project area.

LEGAL COMPLIANCE BASIS

This Project is subject to both state and local regulations, including CEQA and the City of Moreno Valley General Plan. CEQA declares that it is state policy to "take all action necessary to provide the people of this state with... historic environmental qualities." It further states that public or private Projects financed or approved by the state are subject to environmental review by the state. All such Projects, unless entitled to an exemption, may proceed only after this requirement has been satisfied. CEQA requires detailed studies that analyze the environmental effects of a proposed Project. In the event that a Project is determined to have a potential significant environmental effect, the act requires that alternative plans and mitigation measures be considered. CEQA includes historic and archaeological resources as integral features of the environment. The level of consideration may vary with the importance of the resource.

The *Moreno Valley General Plan's* Objective 7.6 is to "identify and preserve Moreno Valley's unique historical and archaeological resources for future generations" (City of Moreno Valley 2006). Five policies aim to promote this objective, including Policy 7.6.2, "implement appropriate mitigation measures to conserve cultural resources that are uncovered during excavation and construction activities" (City of Moreno Valley 2006).

RESEARCH THEMES WITHIN THE PROJECT AREA

Riverside County has a rich prehistoric and historic cultural heritage. However, based on previous research, minimal cultural resources are known to exist within the Project Area and nearby region. Of the known resources, prehistoric sites appear to occur along intermittent drainages, and are often associated with boulder outcrops. Food processing sites, consisting of bedrock grinding and milling features, and ground stone implement fragments are found within the region. The closest known sites of this type are located along the foothills and canyons to the south, indicating that some areas may have been used more frequently or for longer periods. Petroglyph sites are known to exist in the general region but have not been encountered in the vicinity of the Project area.

Future archaeological research within the general Project area has the potential to address research questions regarding settlement patterns, site structure, subsistence strategies, trade and distribution networks and tool technologies. Questions for the Project have been selected to contribute to the context and understanding of the prehistory and history of California. Based on the literature review, research questions fall into several prehistoric and historic domains. The prehistoric research domains are Chronology and Cultural Affiliation, Subsistence and Site Function, and Toolstone Procurement and Use. Historic research domains focus primarily on the topics of Community Development. Defining research questions also helps focus the documentation of resources during survey so that artifacts, features and other remains that can contribute to an understanding of regional history and prehistory are carefully noted.

CHRONOLOGY AND CULTURAL AFFILIATION

At prehistoric sites throughout Western Riverside County, chronometric data generally derive from time-sensitive artifacts (e.g., projectile points, beads, and ceramics), physically dateable artifacts (e.g., obsidian), and organic remains (dateable through chronometric assay). Time-sensitive and dateable artifacts can occur in surface and subsurface contexts, the former sometimes being less reliable than the latter in terms of dating archaeological components. Dateable organic remains (e.g., bone, shell, fiber, loose charcoal) can be acquired from midden deposits or, in the best examples, from buried features like hearths. In any case, sites that have dateable items or remains can be placed at least tentatively within an existing temporal framework, be it local or regional, and used to compare and contrast temporal adaptive patterns in human behavior. For the most part, sites that can be dated have greater overall data potential than undated sites because they can be placed in time and can help refine our understanding of long-and short-term changes in prehistoric human adaptation.

Given the importance of chronological data to all archaeological interpretation, it will be critical to document the presence of any time-sensitive artifacts within the Project area. Sites that can contribute valuable chronological data may be recommended eligible for listing on CRHR under Criterion (4), research potential.

SUBSISTENCE-SETTLEMENT PATTERNS

Subsistence is one of the most basic of human needs having a direct effect on human behavior. Prehistoric subsistence procurement activities consist of any number of variables including: site location in relation to land form, water supply, and raw materials; site size; site function; and duration of occupation. Material culture, such as lithic and ground stone tools, ceramics, and faunal and botanical remains, provide data representative of subsistence-related activities and strategies.

The Project Area is within a larger settlement area used by the Cahuilla, Luiseño and several other overlapping cultures, which are known in the area near Moreno Valley. Information on the nature and intensity of prehistoric use of the Project area, including the types of sites present, their density, and environmental context, will contribute to a more complete picture of settlement and subsistence patterns in this part of California. Combined with chronological information (above), this information can also assist in determining adaptive changes over time. Sites that can offer valuable data concerning prehistoric subsistence-settlement patterns may be recommended eligible for listing on CRHR under Criterion (4), research potential.

TOOL-STONE PROCUREMENT AND USE

Basic patterns in lithic materials use can be useful for reconstructing the approximate geographic extent of past settlement and trade systems. Sites that can offer valuable information concerning patterns of prehistoric toolstone procurement and use may be recommended eligible for listing on CRHR under Criterion (4), research potential, particularly if they are accompanied by chronological data that can be used to place stone-working behaviors in time.

HISTORIC RESEARCH DOMAINS

Historic archaeological sites can offer important data concerning any number of historic themes, and may be recommended eligible for listing on CRHR under Criterion (4), research potential. They might also be eligible under Criterion (1) if they can be linked to certain historical events that were important in California's past, Criterion (2) if they are found associated with persons important in history, or under Criterion (3) if they contain structural features that are distinctive of a particular historic period or demonstrate an exceptional aesthetic quality. For the

purposes of this Project, we plan to focus historic period research on the theme of community development and built environments. The historic research domains will specifically address the historic-era built environment within the City of Moreno Valley, as it is felt that this topic is important to our understanding of the history in Western Riverside County.

SIGNIFICANCE EVALUATIONS

The criteria for listing resources on the California Register of Historic Resources (CRHR) were expressly developed to be in accordance with previously established criteria developed for listing on the National Register of Historic Places, and require similar protection to what National Historic Preservation Act Section 106 mandates for historic properties. According to Public Resources Code (PRC) Section 5024.1(c) (1-4), a resource is considered historically significant if it meets at least one of the following criteria:

1. Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States;
2. Associated with the lives of persons important to local, California or national history;
3. Embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values; or
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

In addition to having significance, resources must have integrity for the period of significance. The period of significance is the date or span of time within which significant events transpired, or significant individuals made their important contributions. Integrity is the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance. Alterations to a resource or changes in its use over time may have historical, cultural, or architectural significance. Simply, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. A resource that has lost its historic character or appearance may still have sufficient integrity for the California Register, if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data. Note that California Historical Landmarks with numbers 770 or higher are automatically included in the CRHR.

Sites with the potential to yield artifacts and other data that can address research questions may be evaluated as eligible for CRHR listing per Criterion (4). Some prehistoric sites may be evaluated as CRHR-eligible under Criterion (1) if they relate to culturally significant events or (mythological) persons (Criterion 2), or represent high artistic forms (e.g., rock art), per Criterion (3).

Under CEQA, if an archaeological site is not a significant "historical resource" but meets the definition of a "unique archaeological resource" as defined in PRC Section 21083.2, then it should be treated in accordance with the provisions of that section. A unique archaeological resource is defined in PRC Section 21083.2(g) as follows: An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Resources that neither meet any of these criteria for listing on the NRHP or CRHR nor qualify as a “unique archaeological resource” under CEQA PRC Section 21083.2 are viewed as not significant. Under CEQA, “A non-unique archaeological resource need be given no further consideration, other than the simple recording of its existence by the lead agency if it so elects” [PRC Section 21083.2(h)].

Impacts to historical resources that alter the characteristics that qualify the historical resource for listing on the CRHR are considered to be a significant effect (under CEQA). The impacts to a historical resource are considered significant, if the Project activities physically destroy or damage all or part of a resource, change the character of the use of the resource or physical feature within the setting of the resource which contribute to its significance, or introduce visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource. If it can be demonstrated that a Project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (Section 21083.2 (a), (b), and (c)).

METHODS

CALIFORNIA HISTORIC RESOURCES INVENTORY SYSTEM AND CULTURAL BACKGROUND RESEARCH

On February 8, 2019, Sonia Sifuentes, M.Sc., MCC Senior Archaeologist, conducted a search of the California Historical Resource Information System (CHRIS) at the Eastern Information Center (EIC), located at the University of California, Riverside, Riverside County. The search covered any previously recorded cultural resources and investigations within a 1-mile radius of the Project Area within Riverside County. The CHRIS search also included a review of the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), the California Points of Historical Interest list, the California Historical Landmarks list, the Archaeological Determinations of Eligibility list, and the California State Inventory of Historic Resources.

NATIVE AMERICAN OUTREACH AND BACKGROUND RESEARCH

A Sacred Lands File search was requested by MCC from the Native American Heritage Commission (NAHC) on February 4, 2019. The Commission responded on February 7, 2019, stating that there are no known sacred lands within a 1-mile radius of the Project Area. The NAHC requested that 15 Native American tribes or individuals be contacted for further information regarding the Project Area and vicinity. MCC subsequently sent letters on February 8, 2019 to the 15 Native American contacts, requesting any information related to cultural resources or heritage sites within or adjacent to the Project Area. Additional attempts at contact by emails were made on February 25 and March 15, 2019.

CULTURAL RESOURCES SURVEY METHODS

The survey stage is important in a Project's environmental assessment phase to verify the exact location of each identified cultural or paleontological resource, the condition or integrity of the resource, and the proximity of the resource to areas of cultural resources sensitivity. Julia Carvajal, MCC Archaeologist, conducted the survey of the proposed Project Area on March 1, 2019. The survey consisted of walking in parallel transects spaced at approximately 10-meter intervals over the Project parcel, while closely inspecting the ground surface. All undeveloped ground surface areas within the ground disturbance portion of the Project Area were examined for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools or fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions and features indicative of the former presence of structures or buildings (e.g., postholes, foundations), or historic-era debris (e.g., metal, glass, ceramics). Existing ground disturbances (e.g. cutbanks, ditches, animal burrows, etc.) were visually inspected. Representative photographs were taken of the entire Project Area.

RESULTS

CALIFORNIA HISTORIC RESOURCES INVENTORY SYSTEM AND CULTURAL BACKGROUND RESEARCH

The CHRIS records search identified a total of 35 cultural resources investigation that have been previously conducted within a 1-mile radius buffer around the Project Area (see Table 1). A total of three of these investigations are located adjacent to the Project Area and a total of three investigations have intersected portions of the Project Area. The records search identified a total of 55 previously recorded cultural resources within a 1-mile buffer (see Table 2). While there are no previously recorded resources located within the Project Area boundaries, five resources are located within ¼-mile of the Project Area and 21 resources are located within 1/2-mile of the Project Area. A total 16 sites are historic, including three refuse scatters, five associated with water, two burials removed by the coroner, two single family properties, two foundations/structure pads, one farm/ranch, and one wall/fence. A total of 38 sites are prehistoric, including 35 bedrock milling features, one of which had a granite bifacial mano recovered during monitoring activities (P-33-003067), one rock shelter and two isolate resources. A review of historical aerial photographs and maps available indicated that prior to the 1970s, the Project Area was undisturbed from modern human activity. There are some minor plowing activities observed during the late 1970s. By the mid-1990s, development around the Project Area increased and it appears additional grading/plowing activities occurred (see Table 3 and Figures 4-5). Maps depicting the extent of prior surveys and locations of cultural resources are found in Confidential Appendix B.

Table 1. Previous Conducted Cultural Resources Studies within 1-mile Buffer of Project Area

CHRIS Report Number	Authors	Year	Title of Study	Affiliation	Distance from Project Area
RI-00414	T. Holcomb	1978	Environmental Impact Evaluation: Archaeological Assessment of Two Portions of Land in Moreno Valley, Riverside County, California	Archaeologica I Research Unit, U.C. Riverside	Within ½ mile
RI-00912	J.A. Salpas	1984	Environmental Impact Evaluation: Archaeological Assessment of General Plan Amendment 218 Sunnymead, California	Consulting Archaeologist	Within ¼ mile
RI-00913	C.E. Drover	1980	An Archaeological Assessment of RS 49/8 75 Acres of Land in Moreno Valley, Riverside County	Archaeologica I Consultant	Within ¼ mile
RI-01632	D.M. Van Horn	1983	Archaeological Survey Report: TT 12681 in Sunnymead, Riverside County, California	Archaeologica I Associates, LTD	Within 1 mile
RI-01822	C.E. Drover	1984	EIR: An Archaeological Assessment of the Pettit Hill Specific Plan	Author(s)	Within ¼ mile
RI-01850	Scientific Resource Surveys, Inc	1984	Cultural Resource Survey Report for Tract 19861, Near Moreno, Riverside County, California	Author(s)	Intersects Project Area
RI-01851	Scientific Resource Surveys, Inc	1984	Cultural Resource Survey Report for Tract 19861, Near Moreno, Riverside County, California	Author(s)	Intersects Project Area
RI-01852	M.E. Macko	1988	Draft Report of An Archaeological Records Check and Literature Review for the Stoneridge Center Specific Plan No. 211, City of Moreno Valley, Riverside County, California	The Keith Companies	Within ½ mile
RI-01853	C.E. Drover	1990	Environmental Impact Evaluation: The Stoneridge Project Riverside County, California	Author(s)	Within ½ mile

Table 1. Previous Conducted Resources Studies within 1-mile Buffer of Project Area

CHRIS Report Number	Authors	Year	Title of Study	Affiliation	Distance from Project Area
RI-02171	D.F. McCarthy	1987	Cultural Resources Inventory For the City of Moreno Valley, Riverside County, California	Archaeologica I Research Unit, U.C. Riverside	Intersects Project Area
RI-02172	C.E. Drover	1990	Environmental Impact Evaluation: Highway 60 Corridor Study, Moreno Valley, Riverside County, California	Consulting Archaeologist	Adjacent
RI-04353	C. Duke	1999	Letter Report: Cultural Resource Assessment for the AT&T Wireless Services Facility Number C497.1, County of Riverside, California	LSA Associates, Inc	Within 1 mile
RI-04607	C.R. Demack	2002	Phase I Archaeological Assessment of 72-Acre Parcel in the City of Moreno Valley, Riverside County, California	Archaeologica I Resource Management Corp	Within ¼ mile
RI-04717	K.A. O’Connell	2002	Letter Report: Results of Archaeological Survey Conducted at Proposed “Moreno Beach” Verizon Wireless Tower Site, Riverside County, California	URS, Santa Ana	Within 1 mile
RI-05141	N.Harris and D. Gallegos	2005	Cultural Resources Survey Report for Nason Basin, Riverside County Flood Control and Water Conservation District, Riverside County, California	Gallegos & Associates	Within 1 mile
RI-05473	J. Keller	2005	A Phase I Cultural Resources Assessment of APN 477-120-004, -005, +/- 31.0 Acres of Land in Moreno Valley, Riverside County, CA	Author(s)	Within 1 mile
RI-05474	J. Keller	2005	A Phase I Cultural Resources Assessment of Tentative Tract Map 33901, +/- 17.95 Acres of Land in Moreno Valley, Riverside County, California	Author(s)	Within 1 mile
RI-06751	V. Austerman	2006	Archaeological Monitoring Program: Stoneridge Ranch, City of Moreno Valley, Riverside County, California	LSA Associates, Inc	Within 1 mile
RI-06753	J.A. McKenna	2006	A Phase I Cultural Resources Survey of the Proposed Moreno Valley Unified School District High School #5, Located West of Redlands Blvd. in the City of Moreno Valley, Riverside County, California	McKenna et al.	Within 1 mile
RI-06754	M. Robbins-Wade	2006	Cultural Resources Inventory, Lowe’s Moreno Valley Project, Moreno Valley, Riverside County, California	Affins	Within 1 mile
RI-06886	Tetra Tech, Inc	2006	An Archaeological Survey of Approximately 20 Acres (AP 477-180-012 and -013) for the Tentative Tract 34397 Moreno Valley Project Located Southeast of Cottonwood Avenue and Nason Street, Moreno Valley, Riverside County, California 92555	N/A	Within 1 mile
RI-07035	J.A. Keller	2005	A Phase II Historical Resources Investigation of Structures Located Within Tentative Tract map 33901	Cultural Resources Consultant	Within 1 mile
RI-07644	F.W. Lange	2007	Cultural Resources Assessment: Eucalyptus Industrial Park, City of Moreno Valley, Riverside County, California	LSA Associates, Inc	Adjacent

Table 1. Previous Conducted Resources Studies within 1-mile Buffer of Project Area

CHRIS Report Number	Authors	Year	Title of Study	Affiliation	Distance from Project Area
RI-08153	W. Bonner and M. Aislin-Kay	2008	Letter Report: Cultural Resource Records Search and Site Visit Results for T-Mobile Candidate	Michael Brandman Associates	Within 1 mile
RI-08241	J.E. McKenna	2008	A Phase I Cultural Resources Investigations of the Proposed Westridge Commerce Center at Redlands Blvd. and the Moreno Valley, Riverside County, California	McKenna, et al.	Within ½ mile
RI-08242	J.E. McKenna	2008	A Phase I Cultural Resources Survey of Two Alternative Moreno Valley Unified School District Sites, City of Moreno Valley, Riverside County, California	McKenna, et al.	Within 1 mile
RI-08357	Jacquemain, T.; Ballester, D.; and Shaker, L.H.	2009	Identification and Evaluation of Historic Properties: Moreno MDP Line K Project, City of Moreno Valley, Riverside County, California	CRM Tech	Within 1 mile
RI-08368	J.E. McKenna	2009	Addendum Study: A Phase I Cultural Resources Survey of Two Alternative Sewer Pipeline Alignments for the Moreno Valley Unified School District Sites, City of Moreno Valley, Riverside County, California	McKenna, et al.	Within 1 mile
RI-08674	R.E. Parr	2011	Cultural Resource Assessment for the Replacement of Deteriorated Power Pole #4601073E	Cal Heritage	Within 1 mile
RI-08689	S.A. Williams	2010	Cultural Resources Records Search and Site Visit results for T-Mobile USA Candidate IE25690-C (Cottonwood Park), 28590 Cottonwood Avenue, Moreno Valley, California	Michael Brandman Associates	Within 1 mile
RI-08802	Tang, B.T.; Hogan, M.; Encarnacion, D.; and Ballester, D.	2012	Phase I Archaeological Assessment: Moreno Valley Drainage Plan Revision	CRM Tech	Adjacent to within 1 mile
RI-09385	M.M. DeCarlo and D.L. Winslow	2015	Engineering Refinement Survey and Recommendation of Eligibility for Cultural Resources with Southern California Edison Company's West of Devers Upgrade Project, Riverside and San Bernardino Counties, California	ASM Affiliates	Within 1 mile
RI-10257	F.W. Lange	2011	Cultural Resources Assessment Eucalyptus Industrial Park City of Moreno Valley Riverside County, California	LSA Associates, Inc	Adjacent
RI-10485	W. Blumel	2018	Cultural Resources Monitoring Report Cottonwood Interim Basin	ECORP Consulting, Inc	Within 1 mile
RI-10497	W. Blumel and A. Myers	2017	Cultural Resources Investigation of the One-Acre Cottonwood Basin Project in the City of Moreno Valley	ECORP Consulting, Inc	Within 1 mile

Table 2. Previous Recorded Resources within 1-mile Buffer of Project Area

Primary Number	Trinomial	Age	Attributes	NRHP/CRHR	Distance from Project Area
P-33-002863	CA-RIV-002863	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-002864	CA-RIV-002864	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-002865	CA-RIV-002865	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ¼ mile
P-33-002866	CA-RIV-002866	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003067	CA-RIV-003067	Prehistoric	AP04 (Bedrock milling feature); AP16 (Isolate-mano)	Unknown	Within ½ mile
P-33-003088	CA-RIV-003088	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-003089	CA-RIV-003089	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-003232	CA-RIV-003232	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ¼ mile
P-33-003233	CA-RIV-003233	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-003234	CA-RIV-003234	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-003248	CA-RIV-003248/H	Historic	AH05 (Wells/cisterns)	Unknown	Within 1 mile
P-33-003959	CA-RIV-003959	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003960	CA-RIV-003960	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003961	CA-RIV-003961	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003962	CA-RIV-003962	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003963	CA-RIV-003963	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003964	CA-RIV-003964	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003965	CA-RIV-003965	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003966	CA-RIV-003966	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-004286	CA-RIV-004286	Historic	AH12 (Graves/cemetery)	Unknown	Within ½ mile
P-33-007281		Historic	HP02 (Single family property); HP44 (Adobe building/structure)	Unknown	Within 1 mile
P-33-011215	CA-RIV-008087	Historic	HP33 (Farm/ranch)	Unknown	Within 1 mile
P-33-013710	P-33-013710	Historic	AH12 (Graves/cemetery)	Unknown	Within ½ mile
P-33-014952	P-33-014952	Historic	AH06 (Water Conveyance System)	Recommended ineligible for CRHR	Within ½ mile

Table 3. Previous Recorded Resources within 1-mile Buffer of Project Area

Primary Number	Trinomial	Age	Attributes	NRHP/CRHR	Distance from Project Area
P-33-015016	P-33-015016	Prehistoric	AP16 (Isolate-mano)	Unknown	Within 1 mile
P-33-015017	P-33-015017	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-015018	CA-RIV-007982	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015019	CA-RIV-007983	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015020	CA-RIV-007984	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015021	CA-RIV-007985	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015022	CA-RIV-007986	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015023	CA-RIV-007987	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015024	CA-RIV-007988	Historic	AH04 (Refuse scatter)	Unknown	Within 1 mile
P-33-015026	CA-RIV-007990	Historic	AH06 (Water Conveyance System)	Unknown	Within 1 mile
P-33-015027	CA-RIV-007991	Historic	AH06 (Water Conveyance System)	Unknown	Within 1 mile
P-33-015028	CA-RIV-007992	Historic	AH04 (Refuse scatter)	Unknown	Within 1 mile
P-33-015029	CA-RIV-007993	Historic	HP22 (Lake/river/reservoir)	Unknown	Within 1 mile
P-33-015030	CA-RIV-007994	Historic	AH06 (Water Conveyance System)	Unknown	Within 1 mile
P-33-015031	CA-RIV-007995	Historic	AH04 (Refuse scatter)	Unknown	Within ½ mile
P-33-015032	CA-RIV-007996	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015147	CA-RIV-008056	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ¼ mile
P-33-015148		Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-015149		Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015150		Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015320	CA-RIV-008088	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-015796		Historic	AH02 (Foundations/structure pads)	Unknown	Within 1 mile

Table 4. Previous Recorded Resources within 1-mile Buffer of Project Area

Primary Number	Trinomial	Age	Attributes	NRHP/CRHR	Distance from Project Area
P-33-015934		Historic	HP02 (Single family property); HP30 (Trees/vegetation); HP33 (Farm/ranch)	Unknown	Within 1 mile
P-33-017851		Prehistoric	AP16 (Isolate-mano)	Unknown	Within 1 mile
P-33-028080	CA-RIV-012677	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-028081	CA-RIV-012678	Historic	AH11 (Walls/fence)	Unknown	Within ½ mile
P-33-028082	CA-RIV-012679	Prehistoric	AP14 (Rock shelter/cave)	Unknown	Within ½ mile
P-33-028083	CA-RIV-012680	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-028084	CA-RIV-012681	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ¼ mile
P-33-028085	CA-RIV-012682	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ¼ mile
P-33-028163	CA-RIV-012706	Prehistoric, Historic	AH04 (Refuse scatter); AP16 (Isolate-tool)	Unknown	Within ¼ mile

Table 5. Additional Sources Consulted for the Project

Source	Results
National Register of Historic Places (1979-2002 & supplements)	Negative
Historical United States Geological Survey topographic maps (USGS 2012)	Negative- agricultural field and vacant lot since the construction of a school and the Moreno Valley Unified School District Administration Office
Historical United States Department of Agriculture aerial photos	Negative- agricultural field and vacant lot since the construction of a school and the Moreno Valley Unified School District Administration Office
California Register of Historical Resources (1992-2010)	Negative
California Inventory of Historic Resources (1976-2010)	Negative
California Historical Landmarks (1995 & supplements to 2010)	Negative
California Points of Historical Interest (1992 to 2010)	Negative
Local Historical Register Listings	Negative
Bureau of Land Management General Land Office Records (BLM GO 2008)	Negative

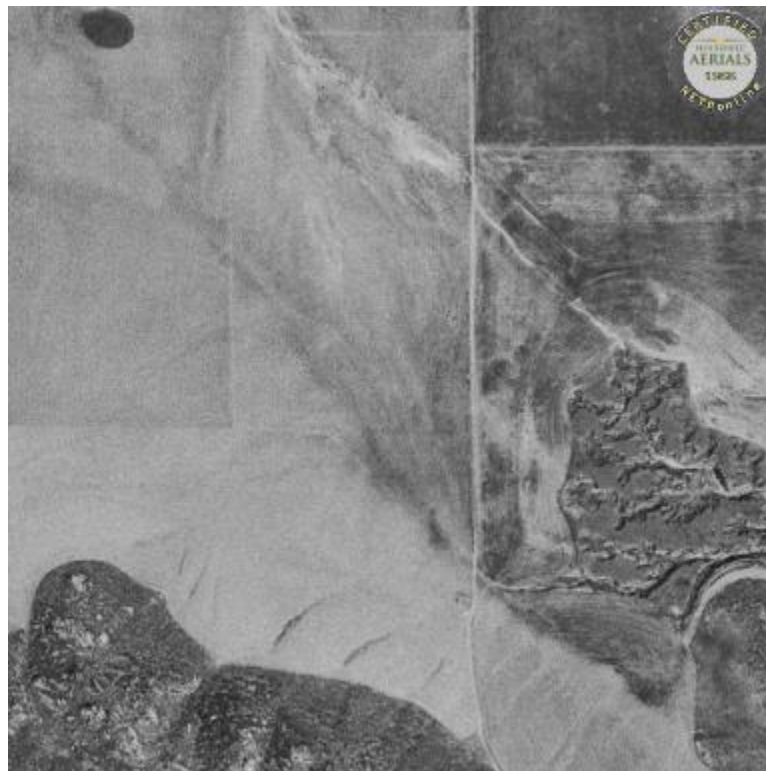


Figure 4. Project Area prior to development (depicted on 1966 aerial photograph)



Figure 5. Project Area with surrounding residential development (depicted on 2012 aerial photograph)

NATIVE AMERICAN OUTREACH AND BACKGROUND RESEARCH

On February 13, 2019, MCC received an email with a letter attachment from Lucy Padilla, Archaeological Technician for the Agua Caliente Band of Cahuilla Indians. The letter indicates that the Project Area is not located within the boundaries of the ACBCI Reservation, but within the Tribe's Traditional Use Area. ACBCI deferred to both Soboba and Morongo Band of Mission Indians and stated that the letter concluded their consultation efforts.

On February 21, 2019, MCC received a letter from Judy Strapp, Director of Cultural Affairs for the Cabazon Band of Mission Indians via USPS. According to the letter, the Project is located outside the Tribe's current reservation boundaries and the Tribe has no specific archival information on the site indicating that it may be a sacred/religious site or other site of Native American traditional cultural value.

On February 25, 2019, Bobby Ray Esparza of the Cahuilla Band of Indians sent a response via email. Mr. Esparza informed us that the project is within a Cahuilla Traditional Use Area and requests tribal monitors be present at all stages going forward.

On Feb 28, 2019, MCC received a letter from Victoria Martin, Tribal Secretary for the Augustine Band of Cahuilla Mission Indians. At this time, the Tribe is unaware of specific cultural resources that may be affected by the proposed Project. They encouraged contact with other Native American Tribes/individuals within the immediate vicinity of the Project site that may have specific information concerning cultural resources; to contract with a monitor who is qualified in Native American resources to be present onsite full-time during pre-construction and construction of the Project and to be notified immediately of any cultural resources discoveries during the development of the Project.

On February 28, 2019, MCC received an email from Travis Armstrong, Tribal Historic Preservation Officer for the Morongo Band of Mission Indians. The Tribe stated in this email that they have no information to provide to MCC

but will offer additional information during the AB 53 consultation process. Tribe also request to be notified in advance of field survey date. MCC notified the Tribe via email prior to the survey, however we did not receive a response to this email prior to survey.

No other additional groups or individuals have responded with information about the Project Area as of March 19, 2019. All written NAHC and Native American correspondence materials and our communication log are provided as Appendix C.

CULTURAL RESOURCES SURVEY RESULTS

At the time of survey, conditions were good and ground visibility varied from very poor (less than 10%) to excellent (approximately 100%) throughout the 6.3-acre Project Area. Recently graded areas were devoid of vegetation and visibility was excellent, however, within the southern part of the Project Area, dense overgrowth of brittle bush, grasses and other weeds obstructed ground visibility. In addition, a homeless encampment was located in the Southeast corner and this area was not surveyed due to safety concerns. The Project Area was relatively flat, except for a mounded push pile of concrete rubble, pavement, naturally occurring rock and soil. The mounded pile was located in the southern portion of the Project Area. Soil throughout the Project Area is comprised of a sandy loam with some inclusions. Modern refuse was observed throughout the Project Area. No cultural resources were observed during the survey. Representative photos of the area are found below (Figures 6-9).



Figure 6. Project Overview showing area of excellent visibility from Northeast corner (View South)



Figure 7. Project Overview showing poor visibility from Southwest corner (View North)



Figure 8. Hilled area in Southern extent of Project Area (View West)

CONCLUSIONS AND RECOMMENDATIONS

The Phase I cultural resource assessment of the Project Area included a CHRIS records search, NAHC outreach, background research, and a field pedestrian survey. The records search results indicated no previously recorded resources within the Project Area, however, 55 resources are located within 1-mile of the Project Area, including a multitude of prehistoric sites within a ½-mile radius of the Project Area. The intensive modification and disturbance associated with construction of nearby residential buildings, structures, and roadways, and grading and surface modification of the Project Area, has eradicated any near-surface record of prehistoric, ethnohistoric, or historic-era behavioral activities that may have otherwise been preserved as archaeological sites, deposits or features. While not visible at the surface, archaeological features and resources may have subsurface components that could be revealed during construction of the proposed Project. Based on the results of the cultural resources search and survey, the proposed Project Area is considered to have a moderate to low sensitivity for presence of prehistoric or historical archaeological deposits or features. At this point, MCC recommends that **No Mitigation is Needed**. While we do not recommend additional mitigation, MCC highly recommends setting a plan in place to expediently address inadvertent discoveries and human remains (as described below), should these be encountered during construction.

In the event that cultural resources are inadvertently discovered during ground-disturbing activities, work must be halted within 100 feet of the find until it can be evaluated by a qualified archaeologist. Construction activities could continue in other areas. If the discovery proves to be significant, additional work, such as data recovery excavation or fossil recovery, may be warranted and would be discussed in consultation with the appropriate regulatory agency(ies).

Procedures of conduct following the discovery of human remains on non-federal lands have been mandated by California Health and Safety Code §7050.5, PRC §5097.98 and the California Code of Regulations (CCR) §15064.5(e). According to the provisions in CEQA, should human remains be encountered, all work in the immediate vicinity of the burial must cease, and any necessary steps to insure the integrity of the immediate area must be taken. The Riverside County Coroner will be immediately notified. The Coroner must then determine whether the remains are Native American. If the Coroner determines the remains are Native American, the Coroner has 24 hours to notify the NAHC, who will, in turn, notify the person they identify as the most likely descendent (MLD) of any human remains. Further actions will be determined, in part, by the desires of the MLD. The MLD has 48 hours to make recommendations regarding the disposition of the remains following notification from the NAHC of the discovery. If the MLD does not make recommendations within 48 hours, the owner shall, with appropriate dignity, reinter the remains in an area of the property secure from further disturbance. Alternatively, if the owner does not accept the MLD's recommendations, the owner or the descendent may request mediation by the NAHC.

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: June 11, 2019

Signed:



Printed Name:

**Tria Belcourt, M.A., RPA, Qualified Riverside County Archaeologist
Principal Investigator and Owner, Material Culture Consulting**

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Appendix A:
Qualifications

Tria Belcourt, M.A., RPA
President and Principal Investigator



Tria Belcourt oversees and is responsible for the entire work process at Material Culture Consulting. She is responsible for planning, supervising, and overseeing field projects, including responsibility for the professional quality of evaluations and recommendations. Tria has primary accountability for the technical completeness and competence of work conducted by her staff. She is responsible for development of work plans and/or research designs, for performance of crew chiefs, for selection standards and limitations on work assignments of crew members, for analysis and interpretation of field data, for integration of fieldwork results into comparative regional perspectives, and for preparation of reports. Tria's advanced academic training and more than twelve years of professional archaeological experience has included rigorous training and application of anthropological and archaeological theory and methods, and in recording, collecting, handling, analyzing, evaluating, and reporting cultural property data, relative to the type and scope of work proposed.

Tria has been an archaeological project manager and principal investigator for over six years, leading and managing several complex compliance projects throughout the State of California and in Southern Nevada, which have involved each step of cultural resource compliance and management. Prior to this, she spent six years as a field technician and crew chief on projects throughout California and the Southeastern United States. Her experience includes conducting background research, field survey, resource testing and formal NRHP/CRHR evaluation, data recovery plan development and implementation. She has prepared hundreds of technical reports for all of the above to state and federal standards, including following BLM standards for GIS spatial data management and technical reporting – ranging from simple clearance forms, to letter reports, to extensive data recovery reports. She was the lead preparer of the Fort Irwin Integrated Cultural Resource Management Plan (2009-2013) and has also prepared several cultural resource management plans for state regulated projects. She has overseen and conducted archaeological monitoring and management of unanticipated discovery of resources, including Native American human remains on federal lands (and repatriation of the remains), and reported the results and outcomes of cultural resource monitoring efforts in lengthy technical reports. Finally, Tria regularly provides third party and QA/QC review of cultural resource technical documents, due to her keen understanding of state and federal regulations and laws governing the management of cultural resources throughout the state of California.

Education

- 2014 Graduate Certificate in Environmental Management of Military Lands, Colorado State University
- 2010 Professional Certification in CEQA/NEPA, ICF International Corporation
- 2009 M.A. in Anthropology, University of Florida Gainesville, Florida
Professional Certification in GIS
- 2006 B.A. in Anthropology, Magna Cum Laude, University of California, Los Angeles, California

Affiliations/Certifications/Training

- Archaeological Institute of America (AIA)
- Society for Historical Archaeology (SHA)
- Society for California Archaeology (SCA)

Utility Sector Experience

Pacific Gas and Electric Company (PG&E), NERC Alert Program – Archaeological Principal Investigator; throughout California; 2015 – Present. Belcourt provides oversight of all task orders and project management of on-call task orders involving cultural resource desktop reviews, records searches and field reviews for the PG&E NERC Alert program: tracking and reporting efforts, maintaining project schedule, and timely submittal of data to prime contractor (ARCADIS).

Southern California Edison (SCE), On-Call and Emergency Projects – Archaeological Principal Investigator and Project Manager; throughout California, 2013 – Present. Belcourt provides oversight of all task orders and project management of on-call task orders involving cultural resource desktop reviews, records searches and field reviews for deteriorated poles, system upgrades, initial studies to support capital projects, and monitoring support to replace facilities due to natural disasters. This high-volume program includes preparing and submitting budgets, managing support staff and overseeing work, tracking and reporting efforts, maintaining project schedules, and preparing technical reports and GIS datasets for submittal to prime contractor (SWCA).

Southern California Edison (SCE), Small Capital Projects – Archaeological Principal Investigator and Project Manager; throughout California, 2014 – Present. Belcourt provides oversight of all task orders and project management of task orders involving cultural resources for this contract with ICF. This includes preparing and submitting budgets, managing support staff and overseeing work, tracking and reporting efforts, maintaining project schedule, and preparing technical reports and GIS datasets for submittal to prime contractor.

Southern California Edison (SCE), Coolwater Lugo Transmission Project — Environmental Project Manager; San Bernardino County, California; 2014 – 2015. Belcourt provided oversight of all project management on CWLTP: tracking and reporting efforts of subconsultants (Pacific Legacy, Paleo Solutions and Urbana Preservation and Planning), maintaining project schedule and timely submittal of project deliverables to agency reviewers. Served as communication facilitator between SCE and BLM/CPUC agency reviewers. Provided final review of the Cultural Resources Technical Report (which included over 1,000 cultural resources) and the Historic Built Environment Report - prior to draft submittal to BLM.

SCE, Eldorado Ivanpah Transmission Project – In-house Consultant for Archaeology; San Bernardino County, California and Clark County, Nevada; 2010-2012. Belcourt provided complex regulatory oversight and project management regarding cultural and paleontological resource management. She developed cultural resource specific compliance training to inform and guide construction activities and major capital project teams. She also developed and implemented internal cultural resource management programs based on the mitigation measures in the FEIR/EIS. Tria coordinated with BLM archaeologists on discovery and management of previously unknown cultural resources discovered during construction, and managed the treatment of these resources and reporting. She provided environmental analyses, technical reports, and clearance documentation for over 20 project modifications during construction without delay to project. Developed the cultural resources geodatabase for EITP and coordinated regularly with the project GIS team.

Silver State South Substation, In-house Consultant for Archaeology; Southern California Edison, Clark County, NV; 2010-2012. Provided regulatory oversight and project management regarding cultural and paleontological resource management during project licensing and scoping. Identified potential impacts to cultural and paleontological resources, developing appropriate mitigation measures in preparation for and projecting alternative conclusions.

Tehachapi Renewable Transmission Project, Multiple Roles; Southern California Edison, Segments 1-3 and Segments 6-11, Kern, Los Angeles and Orange County, CA; 2009 - Present. Tria provided service to this project over seven years in multiple roles – archaeological field monitor, project coordinator, in-house consultant at SCE, and principal investigator. She provided regulatory oversight and project management regarding cultural and paleontological resource management for all segments of TRTP. Developed and implemented internal cultural resource management programs based on the mitigation measures in the Final Environmental Impact Report/Environmental Impact Statement (FEIR/EIS) for TRTP, and for the existing Special Use Permits and Record of Decision for TRTP, issued by the Angeles National Forest (ANF). Oversaw preparation of the Historic Properties Treatment Plans, fieldwork and technical report preparation for two large-scale Phase III Data Recovery excavations on Angeles National Forest. Coordinated with ANF archaeologists on discovery and management of previously unknown cultural resources identified during construction. Provided cultural resources analyses and clearance documentation, including technical reports, for over 100 project modifications during construction without delay to project. Finally, Tria was responsible for maintaining the geospatial data for the project within the SCE cultural resources geodatabase TRTP and coordinated with the project GIS team.

Desert Tortoise Habitat Conservation Plan Area, Principal Investigator; Cadiz Inc., San Bernardino County, CA; 2013. Oversaw records search to identify the extent of previous cultural resources surveys and all previously recorded prehistoric and historic resources within the 7,500-acre Desert Tortoise Habitat Conservation Plan (HCP) area (Project Area) located on lands administered by the BLM Needles Field Office in unincorporated San Bernardino County, California.

Water Sector

OC-44 Pipeline Rehabilitation/Replacement, Mesa Water District, Newport Beach, Orange County, CA; 2014. Conducted a Phase I Cultural Resources Assessment to determine the potential for adverse effects to historic properties during rehabilitation and replacement of the pipeline beneath San Diego Creek, between Jamboree Road and MacArthur Blvd. Records search, Sacred Lands search, NAHC consultation, intensive-level pedestrian survey and GIS mapping of the APE with negative results. Archaeology Project Manager and Principal Investigator and author of technical report.

Ames/Reche Groundwater Storage and Recovery Program, Winters Road Flow Control and Recharge Facility, Mojave Water Agency, Landers, San Bernardino County, CA; 2013. Oversaw intensive cultural and paleontological pedestrian survey of a limited portion of the larger project along Winters Road between Warren Vista Avenue and Pipes Wash, as required by mitigation measures listed in the CEQA Initial Study (IS) and Mitigated Negative Declaration for the Project (MND) (Bighorn Desert View Water Agency 2010). Archaeology and Paleontology Project Manager and Principal Investigator, and author of technical report.

Street and Storm Drain Improvements, Jackson Avenue Bridge at Warm Springs Creek, City of Murrieta, Riverside County, CA; 2014. Oversaw cultural and paleontological monitoring efforts and production of monthly monitoring reports during construction of a new bridge traversing Warm Springs Creek, pursuant to the mitigation measures listed in the Mitigated Negative Declaration and associated Mitigation Monitoring Plan for the Project. Archaeology Project Manager and Principal Investigator and author of technical report.

Housing and Private Development Sector

Bloomington Affordable Housing Project, Bloomington, San Bernardino County, CA; 2013.

Oversaw cultural survey and literature review for the project, pursuant to requirements of federal and state guidelines for archaeology and historic preservation. The Bloomington Affordable Housing Project received federal funding by the United States Department of Housing and Urban Development (HUD). Archaeology Project Manager and Principal Investigator and author of technical report.

Arbor Green Apartments, Affirmed Housing Group, Carson, Los Angeles County, CA; 2013.

Oversaw all monitoring efforts, and data recovery of discovered resources for an HUD affordable housing development project. Archaeology Project Manager and Principal Investigator and author of monitoring and data recovery reports.

Transportation Sector

Los Angeles County Metropolitan Transportation Authority (Metro), Los Angeles County, California; 2014 - Present. Provided archaeological and paleontological services for multiple task orders involving preparation of Mitigation Plans, Evaluation Reports, Mitigation Reports, and construction monitoring for infrastructure improvements. Projects include: Regional Connector (60336473), Crenshaw (60327167), and Division 13 (60323604). Worked as a subconsultant with AECOM. Principal Investigator and Project Manager.

Federal Sector

Bodie Hills Cultural Resources Surveys, Desert Restoration Projects, Bureau of Land Management, Bishop Field Office, Mono County, CA; FY13-14 and FY14-15. Class III Cultural Resources Inventory survey of over 6,000 acres of BLM land identified for vegetation management. Work includes records search, intensive pedestrian survey, archaeological resource inventory and NRHP site evaluations, and a technical report. The survey areas were located between the Town of Bridgeport and Lee Vining. Archaeology Principal Investigator.

Desert Tortoise Habitat Conservation Plan Area, Cadiz Inc., San Bernardino County, CA; 2013.

Oversaw records search to identify the extent of previous cultural resources surveys and all previously recorded prehistoric and historic resources within the 7,500-acre Desert Tortoise Habitat Conservation Plan (HCP) area (Project Area) located in unincorporated San Bernardino County, California. Principal Investigator and contributing author of technical report.

Fort Irwin, U.S. Army National Training Center/GSA Region 9, San Bernardino County, CA; 2012-2013.

Class III Cultural Resources Inventory Survey of 14,332 acres (58 sq. km) and National Register Evaluation of Archaeology Sites east of Goldstone in four survey blocks. The project involved preparation of literature overview, research design and field evaluation guidelines; intensive field survey, site recording and site evaluations to NHPA Section 106 standards. Archaeology Project Manager and Principal Investigator, contributing author of technical and progress reports.

Fort Irwin, U.S. Army National Training Center, San Bernardino County, CA; 2009-2010.

Directed all cultural resource assessments under NEPA and Section 106 of NHPA, including technical reporting of field work (pedestrian surveys, artifact collection and site mapping), formal NRHP evaluation of 50+ archaeological sites, preparation of SHPO consultation letters, and Native American consultation letters. Bureau of Land Management (BLM) Barstow Field Office Coordination and Consultation; led joint SHPO consultation and management efforts for Fort Irwin/NTC for several sites that crossed Fort Irwin and BLM lands and developed and maintained strong working relationship between Fort Irwin/NTC Resource Management Group and BLM Barstow Field Office Resource Management Group. Authored installation guidance documents, including the 2010 Integrated Cultural Resource Management Plan (ICRMP), and the Ft. Irwin/NTC GIS Standard Mapping Procedures. Principal Investigator for Cultural Resources Division, Directorate of Public Works, NTC/Fort Irwin.

Selected Publications

Belcourt, T.

- 2014- 2016 *Southern California Edison – TRTP Segments 6 and 11C - Cultural Resources Monitoring Report*, Prepared Monthly (October 2014-March 2016) for Angeles National Forest (ANF) and SCE. On file at ANF and SCE Irwindale.
- 2013 *Cultural and Paleontological Resource Assessment for the Ames/Reche Groundwater Storage and Recovery Program, Winters Road Flow Control and Recharge Facility, Mojave Water Agency, Landers, San Bernardino County, California*. Prepared by Cogstone Resource Management, Inc. On file at Mojave Water Agency.
- 2014 *Cultural and Paleontological Monitoring Compliance Report for Street and Storm Drain Improvements, Jackson Avenue Bridge at Warm Springs Creek, City of Murrieta, Riverside County*. Prepared by Cogstone Resource Management, Inc. On file at City of Murrieta Planning Department.
- 2014 *Cultural and Paleontological Resource Assessment for the OC-44 Pipeline Rehabilitation and Replacement Project, Mesa Water District, Newport Beach, Orange County, California*. Prepared by Cogstone Resource Management, Inc. On file at Mesa Water District.
- 2015 *Archaeological Monitoring and Survey Report, Southern California Edison Dead Tree Removal near Pine Flat, Tulare County, California*. Submitted to SCE and on file at SCE Irwindale.
- 2015 *Class III Cultural Resources Survey of the Pacific Gas & Electric Company (PG&E) Kerckhoff #1-Kerckhoff #2 115kV and Kerckhoff-Clovis-Sanger 115kV Projects, located on Lands Administered by the Bureau of Land Management (BLM), Bakersfield Field Office, within Fresno County, California*. Prepared on behalf of PG&E and submitted to BLM Bakersfield Office. On file at PG&E, Fresno.
- 2015 *Class III Cultural Resources Survey of the SCE Shoshone Emergency Response Location, on Lands Administered by the Bureau of Land Management (BLM), Barstow Field Office, within Inyo County, California*. Prepared on behalf of SCE and submitted to BLM Barstow Field Office. On file at SCE Irwindale.
- 2015 *Cultural Resources Assessment of Effect for Southern California Edison TD835602: Deteriorated Pole Replacement, Sequoia National Park, Three Rivers Area, Tulare County, California*. Prepared on behalf of SCE for Sequoia National Park. On file at SCE Irwindale.
- 2015 *Cultural Resources Impact Assessment for Southern California Edison TD1037389: Line Extension – Soda Springs 12 kV, Tulare County, California*. Prepared for SCE. On file at SCE Irwindale.
- 2015 *Cultural Resources Inventory for Southern California Edison’s Replacement of Nine Deteriorated Power Structures (TD993840, TD994158, and TD1029116), near Kramer Junction, on Lands Administered by the Bureau of Land Management Barstow Field Office,*

- San Bernardino County, California*. Prepared on behalf of SCE and submitted to BLM Barstow Field Office. On file at SCE Irwindale.
- 2015 *Cultural Resources Monitoring for Southern California Edison IO328390: Replace Pole and Upgrade Overhead Switch – Dinkey Creek 4kV (TD721303). Sierra National Forest, High Sierra District, Fresno County, California*. Prepared on behalf of SCE for Sierra National Forest. On file at SCE Irwindale.
- 2015 *Cultural Resources Survey in Support of a Request for Final Engineering Concurrence for Tehachapi Renewable Transmission Project Segment 8 T/L West (Phase IV) – Erosion Repair Associated with Structure M43-T3, unincorporated Los Angeles County, California*. Submitted to SCE and CPUC. On file at SCE Irwindale.
- 2015 *Cultural Resources Survey in Support of a Temporary Work Change Request for Wire Setup Sites, Distribution Pole Work Area, and Access Road near Structure M57-T2 for Segment 8, Tehachapi Renewable Transmission Project, unincorporated Los Angeles County, California*. Submitted to SCE and CPUC. On file at SCE Irwindale.
- 2015 *Results of Faunal Analysis for the Los Angeles Metropolitan Transportation Authority (Metro) Division 13 Bus Maintenance and Operation Facility Construction Project, City of Los Angeles, Los Angeles County, California*. Submitted to Metro. On file at Resource Sciences and Planning, LLC, Monrovia.
- 2016 *Archaeological Monitoring Compliance Report, Pacific Gas & Electric Company NERC Alert Program, Helms-Gregg 230kV Grading Project, Sierra National Forest, Fresno County, California*. Prepared on behalf of PG&E and submitted to Sierra National Forest. On file at PG&E, Fresno.
- 2016 *Archaeological Resource Assessment, SCE Infrastructure Replacement- Pickle Meadows 12kV, Toiyabe National Forest, Bridgeport, Inyo County, California*. Prepared on behalf of SCE and submitted to Toiyabe National Forest. On file at SCE, Irwindale.
- 2016 *Cultural Resources Assessment: 84 Lumber Company Project, City of Lancaster, Los Angeles County, California*. Prepared on behalf of 84 Lumber Company for City of Lancaster. On file at Material Culture Consulting, Claremont.
- 2016 *Cultural Resources Assessment of Effect for Southern California Edison TD1029531: Deteriorated Pole Replacement on Lands Administered by Bureau of Land Management, Ridgecrest Field Office, near Mojave, Kern County, California*. Prepared on behalf of SCE. On file at SCE Irwindale.
- 2016 *Cultural and Paleontological Resources Records Searches and Field Survey, Tandis Homes Residential Development, City of Menifee, Riverside County, California*. Prepared for City of Menifee. On file at Material Culture Consulting Claremont.
- 2016 *Class III Cultural Resources Survey of the Southern California Edison Company Replacement of Thirteen Deteriorated Poles Near Lockhart and Flamingo Heights, on Lands Administered by the Bureau of Land Management, Barstow Field Office, within San Bernardino County, California*. Prepared on behalf of SCE and submitted to BLM Barstow Field Office. On file at SCE Irwindale.
- 2016 *Phase I Cultural and Paleontological Assessment: Tandis Homes 21 Lot Residential Development Project City of Menifee, Riverside County, California*. Prepared on behalf of Ridgemoor Investments, LLC for City of Menifee Planning Department. On file at Material Culture Consulting, Claremont.
- Belcourt, T. and S. Gust
- 2014 *Class III Cultural Resource Investigations for Bodie Hills Desert Restoration Projects, Bureau of Land Management, Bishop Field Office, Mono County, CA - FY13-14*. Prepared by Cogstone Resource Management, Inc. for BLM Bishop Field Office. On file at BLM Bishop Field Office.
- 2015 *Class III Cultural Resource Investigations for Bodie Hills Desert Restoration Projects, Bureau of Land Management, Bishop Field Office, Mono County, CA - FY14-15*. Prepared by

- Cogstone Resource Management, Inc. for BLM Bishop Field Office. On file at BLM Bishop Field Office.
- Belcourt, T., T. Jackson, M. Kay and R. Moritz
2016 *Class III Cultural Resources Inventory for the Southern California Edison Company Kelly Cutover Project (FWA 680-16-07), Volume I – Archaeological Resources, San Bernardino County, California.* Submitted to BLM Barstow Field Office, On file at Resource Sciences and Planning, LLC, Monrovia.
- Belcourt, T. and M. Kay
2016 *Southern California Edison Company Replacement of Three Deteriorated Poles Near Fort Irwin, on Lands Administered by the Bureau of Land Management, Barstow Field Office, San Bernardino County, California.* Prepared on behalf of SCE and submitted to BLM Barstow. On file at Resource Sciences and Planning, LLC Monrovia.
- Belcourt, T., M. Kay, and R. Moritz
2016 *Cultural Resources Assessment of the State of California Department of General Services and Department of State Hospitals, Metropolitan Hospital, Norwalk, Los Angeles County, CA.* Prepared for DGS/DSH. On file at Resource Sciences and Planning, LLC, Monrovia.
- Belcourt, T. and J. Kelly
2016 *Cultural and Paleontological Resources Assessment: Village 605 Environmental Impact Report Addendum, City of Los Alamitos, Orange County, California.* Prepared for City of Los Alamitos on behalf of Katella Property Owner, LLC by Material Culture Consulting, on file at Material Culture Consulting, Claremont.
- Belcourt, T., K. Scott and S. Gust
2013 *Paleontological and Archaeological Assessment of the Bloomington Affordable Housing Project, San Bernardino County, California.* Prepared by Cogstone Resource Management, Inc., On file at Cogstone Resource Management, Inc., Orange.
- Belcourt, T., M. Valasik, and S. Gust
2013 *Class III Cultural Resource Investigation for the Cadiz Solar Array Desert Tortoise Habitat Conservation Plan Area, on Lands Managed by BLM Needles Field Office, San Bernardino County, CA.* Prepared by Cogstone Resource Management on behalf of Cadiz, Inc.
- Daly, P. and T. Belcourt
2016 *Class III Cultural Resources Inventory for the Southern California Edison Company Kelly Cutover Project (FWA 680-16-07), Volume II – Historic Built Environment Resources, San Bernardino County, California.* Submitted to BLM Barstow Field Office, On file at Resource Sciences and Planning, LLC, Monrovia.

Technical Report QA/QC and Third-Party Review (representative selection)

- Lamb, Meghan
2016 *Archaeological Resources Monitoring Report: Lot 19 Tustin Legacy (Tustin Air Base) Project, City of Tustin, Orange County, California.* Prepared by Paleo Solutions, Inc., and submitted to City of Tustin, California. On file at Paleo Solutions, Monrovia.
- Kelly, J. and G. Aron
2015 *Final Paleontological Monitoring Report: Tehachapi Renewable Transmission Project, Segment 6, Los Angeles County, California.* Prepared for SCE by Paleo Solutions, Inc., and submitted to ANF and CPUC. On file at SCE Irwindale.
- Kelly, J. and G. Aron
2015 *Final Paleontological Monitoring Report: Tehachapi Renewable Transmission Project, Segment 7, Los Angeles County, California.* Prepared for SCE by Paleo Solutions, Inc., and submitted to ANF and CPUC. On file at SCE Irwindale.
- Kelly, J. and G. Aron
2015 *Final Paleontological Monitoring Report: Tehachapi Renewable Transmission Project, Segment 8, Los Angeles County, California.* Prepared for SCE by Paleo Solutions, Inc., and submitted to ANF and CPUC. On file at SCE Irwindale.

Kelly, J. and G. Aron

2015 *Final Paleontological Monitoring Report: Tehachapi Renewable Transmission Project, Segment 11, Los Angeles County, California.* Prepared for SCE by Paleo Solutions, Inc., and submitted to ANF and CPUC. On file at SCE Irwindale.

Tinsley-Becker, W.

2015 *Cultural Resources Inventory for the SCE Coolwater-Lugo Transmission Project, San Bernardino County, California, Volume 1: Historic-Era Built Environment Survey Report.* Submitted to BLM Barstow Field Office, On file at Resource Sciences and Planning, LLC, Monrovia.

Pacific Legacy, Inc.

2015 *Cultural Resources Inventory for the SCE Coolwater-Lugo Transmission Project, San Bernardino County, California, Volume 2: Archaeological Resources.* Submitted to BLM Barstow Field Office, On file at Pacific Legacy, Inc., Berkeley.

Webster, B.

2016 *Archaeological Monitoring Report: OCTA San Juan Capistrano Rail Side Passing Project, City of San Juan Capistrano, Orange County, California.* Prepared for Earth Mechanics, Inc. by Paleo Solutions, Inc. On file at Paleo Solutions, Monrovia.

Webster, B. and M. Kay

2016 *Archaeological Survey Report for the Southern California Edison Company Replacement of Five Deteriorated Power Poles on an Unnamed Circuit (TD 979272), Topanga State Park, Los Angeles County, California.* Prepared by Paleo Solutions, Inc., on behalf of SCE.

2015 *Archaeological Survey Report for the Southern California Edison Company Replacement of One Deteriorated Power Pole on an Unnamed Circuit (TD 1020522), Topanga State Park, Los Angeles County, California.* Prepared by Paleo Solutions, Inc., on behalf of SCE.

2015 *Archaeological Survey Report for the Southern California Edison Company Replacement of Two Deteriorated Power Poles on the Vicasa 16kv Circuit (TD 1039350), Topanga State Park, Los Angeles County, California.* Prepared by Paleo Solutions, Inc., on behalf of SCE.

Sonia R. Sifuentes, M.Sc., RPA
Senior Archaeologist



Ms. Sifuentes exceeds the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* and has over ten years of experience in conducting archaeological investigations and monitoring in Southern California and Nevada, particularly within the Mojave Desert and southwestern extent of the Great Basin. She has experience with monitoring, salvage, fieldwork, NAHC correspondence and Tribal outreach, record searches and report writing. She is currently listed on MCC's Statewide (CA and NV) BLM CRUPs. She is also identified as a Field Director on several ARPA permits for ongoing work on federal lands such as National Parks and National Forests. Duties include, but are not limited to, recordation and evaluation of historic and prehistoric resources, GIS and GPS-based mapping, excavations, lab work, and reporting. She has successfully managed several large- scale and multi-year archaeological projects, including Phase I surveys, Phase II test excavations, background research, and California Register of Historical Resources/National Register of Historic Places evaluation of historic and prehistoric resources.

Education

2016 S.c Archaeology of the North, Distinction, University of Aberdeen, Aberdeen, UK
2006 B.A. in Anthropology with minors Gender Studies, News Media and Society, University of Southern California, Los Angeles, CA

Work History

2017-present: Senior Archaeologist, Material Culture Consulting, Inc
2016-2017: Field Director, PaleoWest Archaeology
2010-2015: Archaeologist, CH2M HILL
2009-2010: Cultural Resource Specialist, SWCA
2008-2009: Cultural and Paleontological Resources Monitor, Cogstone Resource Management, Inc
2008: Archaeological technician, Alpine Archaeological Consultants, Inc
2008: Archaeological technician, University of Iowa Office of the State Archaeology (OSA)

Affiliations/Certifications/Training

Register of Professional Archaeologists (No. 49570530)
Society for California Archaeology (SCA)

Utility Sector Experience

Southern California Edison (SCE) CWA L007 TLRR/ G.O. 131-D Projects – Angeles National Forest, Hungry Valley State Vehicular Recreation Area, Los Padres National Forest, and Private Lands within Los Angeles County, California. Cultural Inventory Survey Assessment (December 2017 – April 2018). The cultural resources scope of work was designed to support the overall environmental analysis of the CWA L007 TLRR / G.O. 131-D Project – Angeles National Forest, Los Padres National Forest, Hungry Valley State Vehicular Recreation Area, and on Private Lands (Project). The survey areas for the Project was along the Pardee-Pastoria and Bailey-Pardee 220 kV circuits, and consisted of 321 poles and 71 work areas, totaling approximately 562 acres. Ms. Sifuentes duties included supervision of two 2-person survey crews throughout the Project's API, compiling any updates for all previously recorded resources within Project's API, application of Collector App to obtain GIS data, and completion of daily paperwork for submittal to prime contractor (SWCA). Additionally, Ms. Sifuentes provided co-authorship of report related to this Project.

SCE Zack Substation Rebuild-Large Capital Projects CWA L002, near Bishop, Mono County, California. On-Call Environmental Services (July 2017 – December 2017). The goal of this project was to increase the capacity of the existing Zack 55/12 kV Substation by replacing, rebuilding, and relocating existing facility components and infrastructure with new equipment inside the substation property and along adjacent Control-Silver Peak "C" 55 kV Subtransmission, Chalifant 12 kV Distribution, and Sagehen 12 kV Distribution circuits. Ms. Sifuentes' duties included monitoring of ground disturbing activities associated with the Project for cultural and paleontological resources, maintaining monitors' field paperwork, coordinating with Native American monitors, construction crews and SCE Project Managers, and daily submittal of construction monitoring reports to prime contractor (SWCA).

SCE Infrastructure Replacement Project, Mebane 12kV Circuit, Sequoia National Forest, Kern County, California. Cultural Resources Study (June 2018 – July 2018). Ms. Sifuentes performed the cultural field survey and co-authored the project letter report.

SCE Infrastructure Replacement Project, Earth 12kV/Nipton 33kV Circuits, Mountain Pass, BLM Needles, San Bernardino County, California. Cultural Resources Study (July 2018-present). Ms. Sifuentes conducted CHRIS records search, performed the cultural field survey, and co-authored the project report.

SCE Infrastructure Replacement Project, Nipton 33kV Circuit, Mountain Pass, BLM Needles, San Bernardino County, California. Cultural Resources Study (July 2018-present). Ms. Sifuentes conducted CHRIS records search, performed the cultural field survey, and co-authored the project report. Cultural resources were identified within the Project boundaries and mitigation measures are currently being development to address impact to these resources.

SCE Infrastructure Replacement Project, Chavez 12kV Circuit, Baker, BLM Needles, San Bernardino County, California. Cultural Resources Study (June 2018-present). Ms. Sifuentes conducted CHRIS records search, performed the cultural field survey, and co-authored the project report. Cultural resources were identified within the Project boundaries and mitigation measures are currently being development to address impact to these resources.

SCE Deteriorated Pole Replace Program, Inyo National Forest, California. Cultural Resources Studies and Monitoring Services (April 2018 – June 2018). Ms. Sifuentes provided monitoring support to multiple deteriorated pole locations within Inyo National Forest. Ms. Sifuentes conducted shovel pit testing for previously recorded resource FS05045200389 located within APE.

SCE Transmission Line Rating and Remediation Project (TLRR) - Kern River 66kV Subtransmission, Kern and Los Angeles Counties, California. Cultural Resource Inventory Assessment (April 2017- present). Ms. Sifuentes supervised a 4-person crew conducting 73-mile linear cultural resource inventory survey of SCE's Kern River 66kV transmission line. Duties include supervision and mobilization of crew during survey work, management of all California DPR-523 forms and GIS data generated during this project, submittal of daily progress reports, and coordinating with prime contractor (Arcadis). Ms. Sifuentes also co-authored survey report.

SCE TLRR G.O. 131-D Evaluation Cottonwood-Savage 115kV Project, Unincorporated San Bernardino County, California. Cultural Resources Study (April 2018-May 2018). Ms. Sifuentes performed portions of the cultural field survey and co-authored the project report.

SCE TLRR G.O. 131-D Evaluation Banning-Zanja 115kV (TD1231024) Project, City of Banning, Riverside County, California. Cultural Resources Study (September 2017). Ms. Sifuentes conducted the CHRIS records search, performed the cultural field survey near Yucaipa and Cherry Valley, CA and co-authored the project report.

SCE TLRR G.O. 131-D Evaluation Banning-Zanja 115kV (TD1275731) Project Yucaipa and Cherry Valley, San Bernardino and Riverside Counties, California. Cultural Resources Study (September 2017). Ms. Sifuentes conducted the CHRIS records search, performed the cultural field survey near Yucaipa and Cherry Valley, CA and co-authored the project report.

SCE TLRR G.O. 131-D Evaluation Project on the Crafton-Mentone-Zanja 115kV Project, Redlands, Mentone, and Yucaipa, San Bernardino County, California. Cultural and Paleontological Resources Studies (July 2017- August 2017). Ms. Sifuentes conducted the paleontological search, performed the cultural field survey, and co-authored the individual cultural and paleontological reports.

SCE Emergency Repairs to Underground Conduit, Chemehuevi Airport, Chemehuevi Indian Reservation, San Bernardino County, California. Cultural Resources Monitoring Services (December 2017). Ms. Sifuentes provided cultural resources monitoring services. During monitoring operations, one isolated prehistoric resource and one small prehistoric resource were observed and documented on California Department of Parks and Recreation (DPR) 523 series forms.

Bechtel Russell City Energy Center, Hayward, Alameda County, California. Cultural Resource Monitoring Services (2011-2012). Ms. Sifuentes' duties including monitoring ground disturbance, coordinating with construction crews, and submittal of construction monitoring reports.

Nextera North Sky River Wind Energy Project and Jawbone Wind Energy Project, Kern County, California. Cultural Resources Inventory (2010). Ms. Sifuentes conducted Phase I survey in Kelso Valley/Tehachapi Mountains, CA.

San Francisco Public Utilities Commission New Irvington Tunnel Project, Pleasanton, California. Cultural Resource Monitoring Services (2010). Ms. Sifuentes' duties including monitoring ground disturbance, coordinating with construction crews, and submittal of construction monitoring reports.

SCE Tehachapi Renewable Transmission Project (TRTP), Segments 1-3A, Kern County, California. Cultural Resource Monitoring Services (2008-2009). Ms. Sifuentes monitored construction throughout Segments 1-3A on TRTP, which extended from Tehachapi at its northern terminus, to Santa Clarita in the southern extent of the project.

TransCanada Pathfinder Project, Colorado and Wyoming. Class I and II Cultural Resources Inventory (September 2008). Ms. Sifuentes conducted Phase I survey along the project route through northwestern Colorado and southwestern Wyoming.

OneOk Piceance Basin Lateral Pipeline Project, Montrose, Colorado. Pre-Construction Archaeological Data Recovery (September 2008- Nov 2008). Ms. Sifuentes participated in Phase III data recovery on in northwestern Colorado.

Rockies Express-East Pipeline Project, Louisiana, Missouri. Archaeological Excavations (July 2008-Aug 2008). Ms. Sifuentes worked on Phase III data recovery for an oil pipeline project.

Housing and Private Development Sector Experience

Rider Commerce Center Project, City of Perris, Riverside County, California. Cultural and Paleontological Assessments (July 2018-present). Ms. Sifuentes conducted CHRIS and paleontological records searches for this project, is facilitating NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the individual cultural and paleontological assessment reports.

Ontario Ranch Commerce Center Project, City of Ontario, San Bernardino County, California. Cultural and Paleontological Assessments (July 2018-present). Ms. Sifuentes conducted paleontological records search for this project, is facilitating NAHC and Native American outreach, and co-authored the combined cultural and paleontological assessment report.

Eagles Nest IV & V Aviation Business Park Project, City of Chino, San Bernardino County, California. Cultural and Paleontological Assessments (July 2018-present). Ms. Sifuentes conducted paleontological records search for this project, is facilitating NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Moreno Valley Skilled Nursing Facility Project, City of Moreno Valley, Riverside County, California. Cultural and Paleontological Assessments (May 2018). Ms. Sifuentes' duties included coordination with the Eastern Information Center, overseeing survey progress, conducting NAHC correspondence and Tribal outreach, and co-authored the Phase I reports for both resources.

Mount Vernon Residential Project, City of Riverside, Riverside County, California. Cultural Assessment (September 2017 – October 2017). Ms. Sifuentes conducted CHRIS records search for this project, facilitated NAHC and Native American outreach, performed the cultural field survey, and co-authored the cultural assessment report.

Nittobo America Manufacturing and Office Building Project, City of Murrieta, Riverside County, California. Biological, Cultural, and Paleontological Assessments (January 2018 – July 2018). Ms. Sifuentes conducted the CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the individual cultural and paleontological assessment reports.

Clinton Keith Mixed Use Development Project, City of Murrieta, Riverside County, California. Cultural and Paleontological Assessments (November 2018-January 2018). Ms. Sifuentes conducted the CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the individual cultural and paleontological assessment reports.

Cottages at Mission Trail Project, City of Lake Elsinore, Riverside County, California. Cultural and Paleontological Assessments and On-call Cultural Resource Monitoring Services (July 2017-present). Ms. Sifuentes conducted the CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the individual cultural and paleontological assessment reports. Ms. Sifuentes will be providing on-call cultural resource compliance services in support of the project once construction begins.

South Orange County Community College District Saddleback Stadium Improvement Project, City of Mission Viejo, Orange County, California. On-Call Cultural and Paleontological Resource Monitoring Services (June 2018 – present). Ms. Sifuentes provides cultural and paleontological resource monitoring services, provides laboratory processes help with paleontological resources recovered during ground-disturbing phase of the project, and provides co-authorship for the final cultural and paleontological monitoring reports.

The Retreat Project, Midway City, Orange County, California. On-Call Cultural Resources Monitoring Services (May 2018 – present). Ms. Sifuentes provides cultural resource monitoring services during ground-disturbing phase of the project and provides co-authorship for the final cultural monitoring report.

The Serrano Business Park, Jurupa Valley, Riverside County, California. On-Call Cultural and Paleontological Resource Monitoring Services (May 2018 – present). Ms. Sifuentes provides cultural resource monitoring services during ground-disturbing phase of the project.

Federal Sector Experience

California Department of General Services (DGS), Various Projects throughout California. AB52 Consultation (September 2017 – present). Ms. Sifuentes has been assisting and coordinating with DGS

Senior Environmental Planner (Terry Ash) and DGS's list of AB 52 tribes for consultation on the following projects: California Men's Colony Solar Project, California Department of Corrections and Rehabilitation (CDCR) Calipatria State Prison Solar Project, CDCR California State Prison Centinela Solar Project, and Chino Hills Institute for Women Solar Array Project. Duties include completion of "Notice of Opportunity to Consult" letters, project description write-up and coordination for any meetings with interested parties.

Cultural Resources Inventory Survey of 10,000 Acres on Fort Irwin, San Bernardino County, California. Cultural Resource Inventory Survey (2016 – 2017). Ms. Sifuentes supervised a 5-person crew conducting a 10,000-acre cultural resource survey at Fort Irwin National Training Center, CA. Duties include supervision and mobilization of crew during survey work, management of all California DPR-523 forms and GIS data generated during this project, submittal of daily progress reports, and coordinating and maintaining a positive working relationship with base personnel.

Passport In Time - USDA Forest Service, Los Angeles National Forest, California. Volunteer Archaeology (May 2008). Ms. Sifuentes helped set up and excavated units in the Chilao Flats camp area.

Solar Sector Experience

Ecoplexus California Correctional Institution Solar Project, Tehachapi, Kern County, California. Cultural and Paleontological Assessments (April 2018 – present). Ms. Sifuentes' duties included coordination with South San Joaquin Valley Information Center, overseeing daily progress with survey crew, conducting NAHC and Native American outreach, and co-authoring the combined cultural and paleontological assessment report.

Ecoplexus Ironwood State Prison and Chuckawalla Valley State Prison Solar Project, City of Blythe, Riverside County. Cultural and Paleontological Assessments (June 2018 – present). Ms. Sifuentes conducted CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, co-authored the combined cultural and paleontological assessment report, and organized site visit between DGS and interested tribal groups.

Ecoplexus California State Prison Centinela Solar Project, City of Imperial, Imperial County, California. Cultural and Paleontological Assessments (August 2017 – April 2018). Ms. Sifuentes conducted CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Ecoplexus Calipatria State Prison Solar Project, City of Calipatria, Imperial County, California. Cultural and Paleontological Assessments (August 2017 – April 2018). Ms. Sifuentes conducted CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Ecoplexus California Men's Colony Solar Project, San Luis Obispo, San Luis Obispo County, California. Cultural and Paleontological Assessments (August 2017 – January 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, and co-authored the combined cultural and paleontological assessment report.

Ecoplexus RJ Donovan State Prison Solar Project, San Diego, San Diego County, California. Cultural and Paleontological Assessments (March 2018 – April 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, and co-authored the combined cultural and paleontological assessment report.

Ecoplexus Salinas Valley State Prison Solar Project, City of Soledad, Monterey County, California. Cultural and Paleontological Assessments (March 2018 – April 2018). Ms. Sifuentes conducted CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Ecoplexus Correctional Training Facility Soledad Project, City of Soledad, Monterey County, California. Cultural and Paleontological Assessments (March 2018 – April 2018). Ms. Sifuentes conducted CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Ecoplexus Ventura Youth Correctional Facility Solar Project, City of Camarillo, Ventura County, California. Cultural and Paleontological Assessments (May 2017). Ms. Sifuentes performed the cultural and paleontological field survey for this project.

SDG&E Cameron Substation Photovoltaic Project, San Diego, San Diego County, California. Cultural and Paleontological Assessments (September 2017 – present). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the individual cultural and paleontological assessment reports. Cultural resources were identified within the Project boundaries and mitigation measures are currently being development to address impact to these resources.

Forefront Power Beard Solar Project, Dustin Acres, Kern County, California. Cultural and Paleontological Assessments (March 2018- April 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Broadman Solar Project, Livermore, Alameda County, California. Cultural and Paleontological Assessments (February 2018- March 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Anderson-Coalinga 1-1109 Solar Project, Ora, Fresno County, California. Cultural and Paleontological Assessments (September 2017-October 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Anderson-Coalinga 2 Solar Project, City of Coalinga, Fresno County, California. Cultural and Paleontological Assessments (September 2017-October 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Anderson-Derrick Solar Project, City of Coalinga, Fresno County, California. Cultural and Paleontological Assessments (September 2017-November 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Anderson-Devil's Den Solar Project, Lost Hills, Kern County, California. Cultural and Paleontological Assessments (September 2017-October 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Anderson-Dulgarian Solar Project, Lost Hills, Kern County, California. Cultural and Paleontological Assessments (September 2017-October 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Anderson-Gates City of Coalinga, Fresno County, California. Cultural and Paleontological Assessments (September 2017-October 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Mahal Property Solar Project, City of Selma, Fresno County, California. Cultural and Paleontological Assessments (September 2017-October 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Rector Reservoir Solar Facility Project, Napa Valley, Napa County, California. Cultural and Paleontological Assessments (August 2017-September 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Nachtigall Solar Project, Wasco, Kern County, California. Cultural and Paleontological Assessments (March 2018-April 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Rocha Solar Project, Fuller Acres, Kern County, California. Cultural and Paleontological Assessments (March 2018-April 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Shafter Solar Project, City of Shafter, Kern County, California. Cultural and Paleontological Assessments (March 2018-present). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report. Cultural resources were identified within the Project boundaries and mitigation measures are currently being development to address impact to these resources.

Forefront Power Anderson Twisselman Solar Project, Lost Hills, Kern County, California. Cultural and Paleontological Assessments (March 2018-April 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Weedpatch Solar Project, Kern County, California. Cultural and Paleontological Assessments (March 2018-present). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report. Cultural resources were identified within the Project boundaries and mitigation measures are currently being development to address impact to these resources.

Peak Valley Solar Project, Kramer Junction, San Bernardino County, California. Cultural Resources Inventory (April 2017). Ms. Sifuentes' duties include supervision and mobilization of survey crew, management of all California DPR-523 forms and GIS data generated during this project, and submittal of daily progress reports.

Mojave Solar Project, San Bernardino County, California. Cultural Resources Monitoring Services (2013-2015). Ms. Sifuentes assisted the Field Director with mobilization of both cultural monitors and Native American monitors during construction excavations for the Project in Hinkley, CA. Duties included maintaining monitors' field paperwork, coordinating with construction crews, and daily submittal of construction monitoring reports.

Hidden Hills Solar Electric Generating System Power Plant Project, Clark County, Nevada. Cultural Resource Assessment (2013). Ms. Sifuentes conducted Phase I surveys of the nearly 400-acre project area near Pahrump.

Transportation Sector Experience

Sand Creek Byway/U.S. 95 Sandpoint Archaeology Project, Sandpoint, Idaho. Archaeological Artifact & Data Reporting (2009-2010). Ms. Sifuentes' duties included cataloged of historical artifacts found within Phase II excavations within Microsoft Access, researching composition, identification, function and date range for artifacts, proper cleaning and preparation of artifacts and writing brief reports on individual artifacts and classes of artifacts.

Selected Publications

Sifuentes, S. and T. Belcourt

2018 *Phase I Cultural Assessment: Moreno Valley Skilled Nursing Facility Project, City of Moreno Valley, Riverside County, California.* Prepared on behalf of T&C International Health, Inc.

- 2018 *Cultural Resources Report for SCE TLRR G.O. 131-D Evaluation Project Cottonwood-Savage 115kV Transmission Line: Town of Apple Valley, Census Designated Place (CDP) Lucerne Valley, and Unincorporated San Bernardino County, California.* Prepared on behalf of Southern California Edison.
- 2018 *Cultural Resources Inventory Report: Southern California Edison Company Transmission Line Rating and Remediation Program Pardee-Pastoria-Warne 220kv Circuit Located On Private Lands And Lands Managed By The United States Department Of Agriculture Angeles National Forest, Los Angeles County, California (ARR #05-01-01301).* Prepared on behalf of Southern California Edison.
- 2018 *Phase I Cultural Resources Assessment: Nittobo America Manufacturing and Office Building Project, City of Murrieta, Riverside County, California.* Prepared on behalf of Nittobo America, Inc.
- 2017 *Cultural Resources Inventory: Southern California Edison Company Transmission Line Rating And Remediation Project, Kern River 66kv, Los Angeles And Kern Counties, California.* Prepared on behalf of Southern California Edison.
- 2017 *Southern California Edison (SCE) Transmission Line Rating and Remediation Project (TLRR) G.O. 131-D Evaluation Program, Banning-Zanja 115kV – TD2131024 and TD127531 Projects, San Bernardino and Riverside Counties, California.* Prepared on behalf of Southern California Edison.
- 2017 *Cultural Resources Report for TLRR G.O. 131-D Evaluation Project on the Crafton-Mentone-Zanja 115kV Project, Redlands, Mentone, and Yucaipa, San Bernardino County, California.* Prepared on behalf of Southern California Edison.
- 2017 *Phase I Cultural Resources Assessment: Cottages at Mission Trail Project, City of Lake Elsinore, Riverside County, California.* Prepared on behalf of Civic Partners-Elsinore, LLC.
- 2017 *Southern California Edison (SCE) Transmission Line Rating and Remediation Project (TLRR) Geotechnical Staking, Kern Inyo, and San Bernardino County, California and Clark County, Nevada, Letter Report for Cultural Resources Survey.* Prepared on behalf of Southern California Edison.
- Sifuentes, S., T. Belcourt, and J. Kelly
- 2018 *Phase I Paleontological Assessment: Moreno Valley Skilled Nursing Facility Project, City of Moreno Valley, Riverside County, California.* Prepared on behalf of T&C International Health, Inc.
- 2018 *Phase I Cultural and Paleontological Assessment: Beard Solar Project CA-17-0135, near the Community of Dustin Acres, Taft, Kern County, California.* Prepared on behalf of Forefront Power.
- 2018 *Phase I Cultural and Paleontological Assessment: Broadman Solar Project Ca-17-0158, near the Community Of Ulmar, Livermore, Alameda County, California.* Prepared on behalf of Forefront Power.
- 2018 *Phase I Cultural and Paleontological Assessment: Rocha Solar Project CA-17-0149, near the Community of Fuller Acres, Bakersfield, Kern County, California.* Prepared on behalf of Forefront Power.
- 2018 *Phase I Cultural and Paleontological Assessment: Shafter Solar Project CA-17-0096, located in City of Shafter, Kern County, California.* Prepared on behalf of Forefront Power.
- 2018 *Phase I Paleontological Resources Assessment: Nittobo America Manufacturing and Office Building Project, City of Murrieta, Riverside County, California.* Prepared on behalf of Nittobo America, Inc.
- 2017 *Cultural and Paleontological Assessment: California Men’s Colony Solar Facility Project, San Luis Obispo, San Luis Obispo County, California.* Prepared on behalf of Ecoplexus, Inc
- 2017 *Cultural and Paleontological Assessment: Anderson-Derrick Solar Project CA-17-0100 near the City of Coalinga, Fresno County, California.* Prepared on behalf of Forefront Power.
- 2017 *Cultural and Paleontological Assessment: Mahal Property Solar Project CA-17-0018 in the City of Selma, Fresno County, California.* Prepared on behalf of Forefront Power.
- 2017 *Cultural and Paleontological Assessment: Anderson-Coalinga 1-1109 Solar Project CA-17-0106 in Ora, Unincorporated Fresno County, California.* Prepared on behalf of Forefront Power.
- 2017 *Cultural and Paleontological Assessment: Anderson-Coalinga 2 Solar Project CA-17-0122 near the City of Coalinga, Fresno County, California.* Prepared on behalf of Forefront Power.
- 2017 *Cultural and Paleontological Assessment: Anderson-Gates Solar Project CA-17-0102 near the City of Coalinga, Fresno County, California.* Prepared on behalf of Forefront Power.
- 2017 *Cultural and Paleontological Assessment: Anderson-Devil’s Den Solar Project CA-17-0101 near Lost Hills, Kern County, California.* Prepared on behalf of Forefront Power.
- 2017 *Cultural and Paleontological Assessment: Anderson-Dulgarian Solar Project CA-17-0090 near Lost Hills, Kern County, California.* Prepared on behalf of Forefront Power.
- 2017 *Phase I Cultural Resources Assessment: Mount Vernon Residential Project, City of Riverside, Riverside County, California.* Prepared on behalf of Forefront Power.
- 2017 *Cultural and Paleontological Assessment: Rector Reservoir Solar Facility Project, Napa Valley, Napa County, California.* Prepared on behalf of Forefront Power.
- 2017 *Cultural and Paleontological Assessment: California Department of Corrections and Rehabilitation California State Prison Centinela Solar Project, City of Imperial, Imperial County, California.* Prepared on behalf of Ecoplexus, Inc.
- 2017 *Cultural and Paleontological Assessment: California Department of Corrections and Rehabilitation Calipatria State Prison Solar Project, City of Calipatria, Imperial County, California.* Prepared on behalf of Ecoplexus, Inc
- 2017 *Cultural and Paleontological Assessment: Magnolia Tank Farm Project, City of Huntington Beach, Orange County, California.* Prepared on behalf of SLF-HB Magnolia, LLC.

- 2017 *Paleontological Resources Report for TLRR G.O. 131-D Evaluation Project on the Crafton-Mentone-Zanja 115kV Project, Redlands, Mentone, and Yucaipa, San Bernardino County, California.* Prepared on behalf of Southern California Edison.
- 2017 *Phase I Paleontological Resources Assessment: Cottages at Mission Trail Project, City of Lake Elsinore, Riverside County, California.* Prepared on behalf of Civic Partners-Elsinore, LLC.

TECHNICAL REPORT QA/QC AND THIRD-PARTY REVIEW

- 2018 *Phase I Cultural Resources Assessment: Metro at Buckingham Senior Housing Project, City of Los Angeles, Los Angeles County, California.* Prepared on behalf of Meta Housing Corporation.
- 2018 *Letter Report for Cultural Resources Monitoring for Southern California Edison's Grid Reliability and Maintenance (GRM) Program – Sundown 12kV Distribution Substation Project on Private Lands near Helendale, San Bernardino County, California.* Prepared on behalf of Southern California Edison.
- 2017 *Anaheim Residential Project, City of Anaheim, Orange County, California, Letter Report for Cultural and Paleontological Resources Records Searches.* Prepared on behalf of SLF-AREP IV South Street, LLC.

CONFERENCE PRESENTATIONS

- 2016 In the Name of the Father, Son, and Thor? A preliminary examination of early Christian conversion in Norse Greenland. Presentation at the 2016 University of Aberdeen Internal Master Conference in Aberdeen, Scotland
- 2010 Pressed Clothes or Pressed Glass? A preliminary examination of press-molded glass at a Chinese Laundry. Presentation at the 63rd Northwest Anthropology Conference in Ellensburg, WA.

Appendix B:
(CONFIDENTIAL) CHRIS Maps

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission

1550 Harbor Blvd, Suite 100

West Sacramento, CA 95691

916-373-3710

916-373-5471 – Fax

nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Moreno Valley Kia

County: Riverside

USGS Quadrangle Name: Sunnymead

Township: 03S **Range:** 03W **Section(s):** 02

Company/Firm/Agency: Material Culture Consulting, Inc.

Street Address: 2701-B N. Towne Ave

City: Pomona **Zip:** 91767

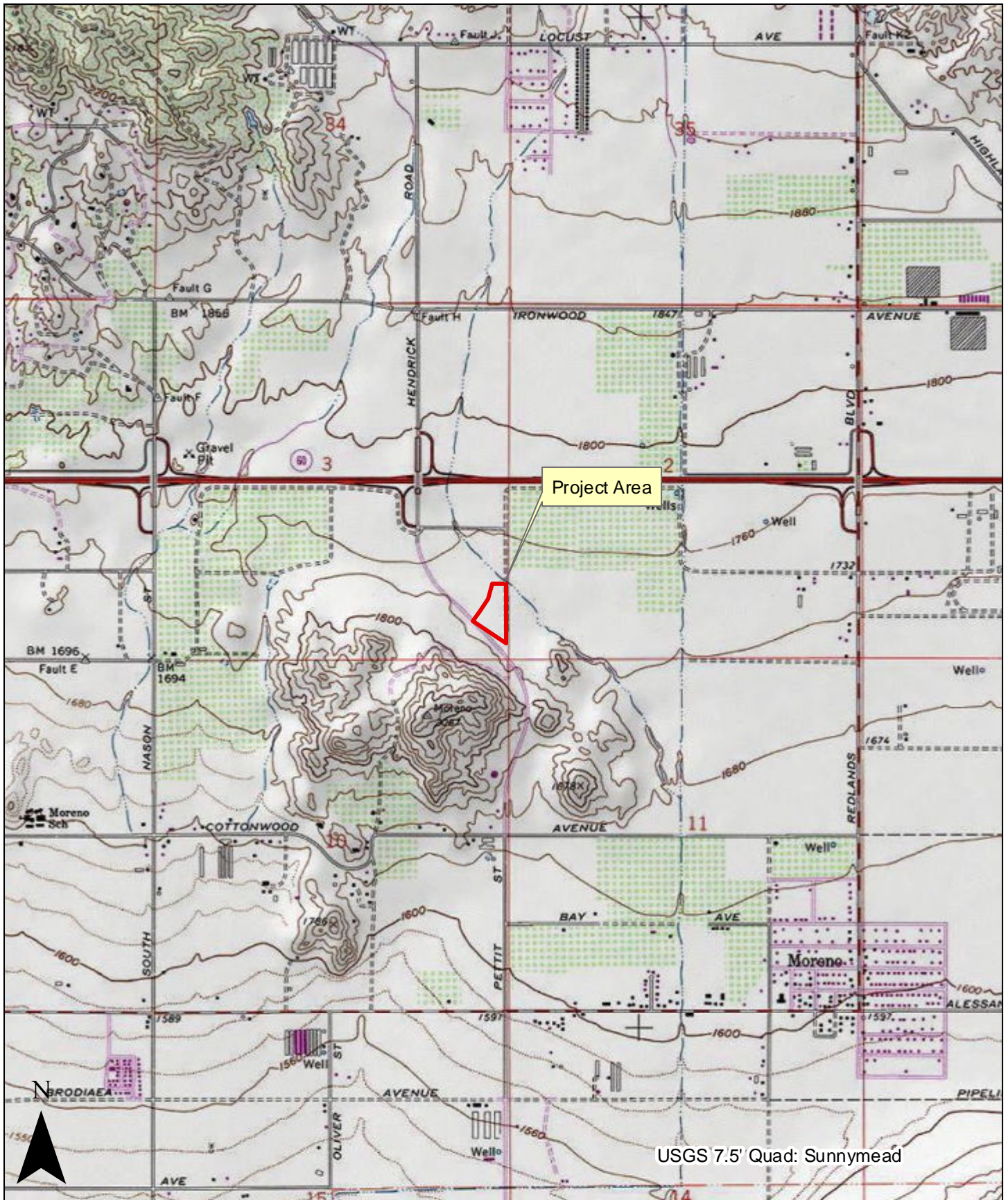
Phone: 626-205-8279

Fax: 626-249-0479

Email: tria@materialcultureconsulting.com

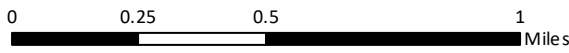
Project Description:

The project proposes the construction of a new commercial use area in Moreno Valley, CA. Please see the attached 24k topo map for a detailed location of the project area.



Project Area

USGS 7.5' Quad: Sunnymead



1:24,000

 Project Area



**Native American Heritage Commission
Native American Contact List
Riverside County
2/7/2019**

**Agua Caliente Band of Cahuilla
Indians**

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Cahuilla Band of Indians

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**Los Coyotes Band of Cahuilla
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Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
admin@ramonatribe.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Moreno Valley Kia Project, Riverside County.

**Native American Heritage Commission
Native American Contact List
Riverside County
2/7/2019**

Ramona Band of Cahuilla

John Gomez, Environmental
Coordinator
P. O. Box 391670 Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
jgomez@ramonatribes.com

***Santa Rosa Band of Cahuilla
Indians***

Steven Estrada, Chairperson
P.O. Box 391820 Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
mflaxbeard@santarosacahuilla-
nsn.gov

***Soboba Band of Luiseno
Indians***

Scott Cozart, Chairperson
P. O. Box 487 Cahuilla
San Jacinto, CA, 92583 Luiseno
Phone: (951) 654 - 2765
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

***Soboba Band of Luiseno
Indians***

Joseph Ontiveros, Cultural
Resource Department
P.O. BOX 487 Cahuilla
San Jacinto, CA, 92581 Luiseno
Phone: (951) 663 - 5279
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

***Torres-Martinez Desert Cahuilla
Indians***

Michael Mirelez, Cultural
Resource Coordinator
P.O. Box 1160 Cahuilla
Thermal, CA, 92274
Phone: (760) 399 - 0022
Fax: (760) 397-8146
mmirelez@tmdci.org

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Moreno Valley Kia Project, Riverside County.

Name/Affiliation	Date and Method of 1st Contact	Date of 1 st Follow Up Attempt	Date of 2 nd Follow-Up Attempt	Results	MCC Response
Patricia Garcia-Plotkin, Director Agua Caliente Band of Cahuilla Indians	February 9, 2019- letter via USPS	Not Necessary	Not Necessary	On February 13, 2019, email received with letter from Lucy Padilla, Archaeological Technician-The Project Area is not located within the boundaries of the ACBCI Reservation, but within the Tribe's Traditional Use Area. ACBCI defers to both Soboba and Morongo Band of Mission Indians and concludes their consultation efforts.	
Jeff Grubbe, Chairperson Agua Caliente Band of Cahuilla Indians	February 9, 2019- letter via USPS	Not Necessary	Not Necessary	See response above	
Amanda Vance, Chairperson Augustine Band of Cahuilla Mission Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	Not Necessary	Letter received on Feb 28, 2019 from Victoria Martin, Tribal Secretary: At the time, the Tribe is unaware of specific cultural resources that may be affected by the proposed Project. They encourage contact other Native American Tribes/individuals within the immediate vicinity of the Project site that may have specific information concerning cultural resources; to contract with a monitor who is qualified in Native American resources to be present onsite full-time during pre-construction and construction of the Project and to be notified immediately of any cultural resources discoveries during the development of the Project.	
Doug Welmas, Chairperson Cabazon Band of Mission Indians	February 9, 2019- letter via USPS	Not Necessary		On February 21, 2019, letter from Judy Strapp, Director of Cultural Affairs, was received via USPS- The Project is located outside the Tribe's current reservation boundaries and the Tribe has no specific archival information on the site indicating that it may be a sacred/religious site or other site of Native American traditional cultural value.	
Daniel Salgado, Chairperson Cahuilla Band of Indians	February 9, 2019- letter via USPS	February 25, 2019 via email		On February 25, 2019 Bobby Ray Esparza sent a response via email. Mr. Esparza informed us that the project is within a Cahuilla Traditional Use Area and requests tribal monitors be present at all stages going forward.	
John Perada, Environmental Director Los Coyotes Band of Cahuilla and Cupeño Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	March 15, 2019 via email		No response as of March 19, 2019

Shane Chapparosa, Chairperson Los Coyotes Band of Cahuilla and Cupeño Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	March 15, 2019 via email		No response as of March 19, 2019
Denisa Torres, Cultural Resources Manager Morongo Band of Mission Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	Not Necessary	On February 28, 2019, email received from Travis Armstrong, Tribal Historic Preservation Officer: Tribe has no information to provided to MCC but will offer additional information during the AB 53 consultation process. Tribe also request to be notified in advance of field survey date.	
Robert Martin, Chairperson Morongo Band of Mission Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	Not Necessary	See response above	
Joseph Hamilton, Chairperson Ramona Band of Cahuilla	February 9, 2019- letter via USPS	February 25, 2019 via email	March 15, 2019 via email		No response as of March 19, 2019
John Gomez, Environmental Coordinator Ramona Band of Cahuilla	February 9, 2019- letter via USPS	February 25, 2019 via email	March 15, 2019 via email		No response as of March 19, 2019
Steven Estrada, Chairperson Santa Rosa Band of Cahuilla Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	March 15, 2019 via email		No response as of March 19, 2019

<p>Scott Cozart, Chairperson Soboba Band of Luiseño Indians</p>	<p>February 9, 2019- letter via USPS</p>	<p>February 25, 2019 via email</p>	<p>Not Necessary</p>	<p>On March 12, MCC received an email containing a letter from Joseph Ontiveros, Tribal Historic Preservation Officer for Soboba Band of Luiseño Indians. Mr. Ontiveros stated that the Project Area location is considered to be culturally sensitive by the people of Soboba. The location is in proximity to known sites and a shared use area that was used in ongoing trade between the tribes. The Soboba Tribe has multiple areas of potential impact identified within their in-house database search. They request to initiate consultation with the Project proponents and lead agency, for transfer of information to Soboba regarding the progress of the Project to be done as soon as new developments occur, and for Soboba to act as a consulting tribal entity for the Project. They also request that Native American monitor(s) from Soboba's Cultural Resource Department be present during any ground disturbing proceedings, including surveys and archaeological testing and request all proper procedures be taken and request of the Tribe be honored</p>	
<p>Joseph Ontiveros, Cultural Resource Department Soboba Band of Luiseño Indians</p>	<p>February 9, 2019- letter via USPS</p>	<p>February 25, 2019 via email</p>	<p>Not Necessary</p>	<p>See response above</p>	
<p>Michael Mirelez, Cultural Resource Coordinator Torres-Martinez Desert Cahuilla Indians</p>	<p>February 9, 2019- letter via USPS</p>	<p>February 25, 2019 via email</p>	<p>March 15, 2019 via email</p>		<p>No response as of March 19, 2019</p>



February 8, 2019

Example Letter

RE: Proposed Moreno Valley Kia Project, City of Moreno Valley; Sunnymead USGS Quadrangle, Riverside County, California.

Greetings,

This Project proposes the construction of a new commercial use area in the City of Moreno Valley, Riverside County, California (see attached map). Material Culture Consulting, Inc (MCC) is conducting the cultural resources review of the project to support preparation of the environmental documents. As part of our background research, we would like to request your input on potential cultural resources within the project area. This request is not part of any formal local, state, or federal consultation process.

Our firm contacted the Native American Heritage Commission (NAHC) on February 4, 2019 to request review of the Sacred Lands File and for a list of tribes with traditional lands and/or cultural places within the area. The NAHC responded on February 7, 2019 stating that the Sacred Lands File review resulted in negative results, and provided your contact information as part of the list. We understand that negative results do not preclude the existence of cultural resources, and that a tribe may be the only source of information regarding the existence of a tribal cultural resource, which is why we are contacting you.

Project Location and Description

The proposed project is located at the intersection of Auto Mall Drive and Moreno Beach Drive, bounded by Auto Mall Drive to west/northwest, Moreno Beach Drive to the south, Pettit Street to the north, and a vacant lot east (see attached map). The area of potential impact (API) includes one parcel that encompass a total of approximately 6.3 acres and located within Section 2 of Township 3 South and Range 3 West (San Bernardino Base Meridian).

Please respond at your earliest convenience if you wish to share any knowledge of cultural resources within or adjacent to the API. Any information, concerns, or recommendations regarding cultural resources within the API can be shared with me via telephone, email, or via standard mail. Thank you very much for your assistance.

Kindest regards,

A handwritten signature in black ink, appearing to read "Tria Belcourt", is written over a horizontal line.

Tria Belcourt, M.A., RPA
President and Principal Archaeologist
626-205-8279
tria@materialcultureconsulting.com

AGUA CALIENTE BAND OF CAHUILLA INDIANS

TRIBAL HISTORIC PRESERVATION



03-024-2019-003

February 13, 2019

[VIA EMAIL TO:tria@materialcultureconsulting.com]
Material Culture Consulting
Mrs. Tria Belcourt
342 Cucamonga Avenue
Claremont, CA 91711

Re: Moreno Valley Kia

Dear Mrs. Tria Belcourt,

The Agua Caliente Band of Cahuilla Indians (ACBCI) appreciates your efforts to include the Tribal Historic Preservation Office (THPO) in the Moreno Valley Kia project. The project area is not located within the boundaries of the ACBCI Reservation. However, it is within the Tribe's Traditional Use Area. For this reason, the ACBCI THPO requests the following:

*At this time ACBCI defers to Soboba. This letter shall conclude our consultation efforts.

*At this time ACBCI defers to the Morongo Band of Mission Indians. This letter shall conclude our consultation efforts.

Again, the Agua Caliente appreciates your interest in our cultural heritage. If you have questions or require additional information, please call me at (760)699-6956. You may also email me at ACBCI-THPO@aguacaliente.net.

Cordially,

Lacy Padilla
Archaeological Technician
Tribal Historic Preservation Office
AGUA CALIENTE BAND
OF CAHUILLA INDIANS



February 13, 2019

Tria Belcourt, M.A., RPA
President and Principal Archaeologist
Material Culture Consulting, Inc.
2701-B North Towne Avenue
Pomona, CA 91767

Re.: Proposed MORENO VALLEY KIA PROJECT
City of Moreno Valley, Sunnymead USGS Quadrangle
Riverside County, California

Dear Ms. Belcourt:

Thank you for contacting the Cabazon Band of Mission Indians concerning cultural resource information relative to the above referenced project.

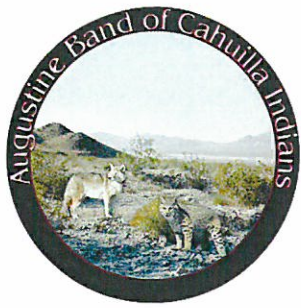
The project is located outside of the Tribe's current reservation boundaries. The Tribe has no specific archival information on the site indicating that it may be a sacred/religious site or other site of Native American traditional cultural value.

We look forward to continued collaboration in the preservation of cultural resources or areas of traditional cultural importance.

Best regards,

Judy Stapp
Director of Cultural Affairs





AUGUSTINE BAND OF CAHUILLA INDIANS

PO Box 846 84-481 Avenue 54 Coachella CA 92236

Telephone: (760) 398-4722

Fax (760) 369-7161

Tribal Chairperson: Amanda Vance

Tribal Vice-Chairperson: William Vance

Tribal Secretary: Victoria Martin

February 19, 2019

Tria Belcourt
Material Culture Consulting
2701-B North Towne Avenue
Pomona, CA 91767

**Re: Proposed Moreno Valley Kia Project, City of Moreno Valley; Sunnymead USGS
Quadrangle, Riverside County, California**

Dear Ms. Belcourt-

Thank you for the opportunity to offer input concerning the development of the above-identified project. We appreciate your sensitivity to the cultural resources that may be impacted by your project, and the importance of these cultural resources to the Native American peoples that have occupied the land surrounding the area of your project for thousands of years. Unfortunately, increased development and lack of sensitivity to cultural resources has resulted in many significant cultural resources being destroyed or substantially altered and impacted. Your invitation to consult on this project is greatly appreciated.

At this time we are unaware of specific cultural resources that may be affected by the proposed project. We encourage you to contact other Native American Tribes and individuals within the immediate vicinity of the project site that may have specific information concerning cultural resources that may be located in the area. We also encourage you to contract with a monitor who is qualified in Native American cultural resources identification and who is able to be present on-site full-time during the pre-construction and construction phase of the project. Please notify us immediately should you discover any cultural resources during the development of this project.

Very truly yours,

A handwritten signature in blue ink, appearing to read "Victoria Martin", with a stylized flourish at the end.

Victoria Martin

Tribal Secretary



Julia Carvajal <julia@materialcultureconsulting.com>

Fwd: Proposed Moreno Valley Kia Project, City of Moreno Valley, Sunnymead USGS Quadrangle, Riverside County, CA

1 message

Tria Belcourt <tria@materialcultureconsulting.com>

Mon, Feb 25, 2019 at 5:18 PM

To: Sonia Sifuentes <sonia@materialcultureconsulting.com>, Julia Carvajal <julia@materialcultureconsulting.com>

Tria Belcourt, M.A., RPA
President

Material Culture Consulting, Inc.
2701-B North Towne Avenue
Pomona, California 91767
626.205.8279
www.materialcultureconsulting.com

----- Forwarded message -----

From: **Cultural Department** <culturaldirector@cahuilla.net>

Date: Mon, Feb 25, 2019, 5:11 PM

Subject: RE: Proposed Moreno Valley Kia Project, City of Moreno Valley, Sunnymead USGS Quadrangle, Riverside County, CA

To: Tria Belcourt <tria@materialcultureconsulting.com>Cc: anthonymad2002@gmail.com <anthonymad2002@gmail.com>

Dear Ms. Belcourt,

The Cahuilla Band of Indians received your letter of February 25, 2019 regarding the Moreno Valley Kia Project in Riverside County, CA. The Cahuilla Band does not have knowledge of any cultural resources within or near the project area. However this project is within the Cahuilla Traditional Land Use Area, therefore we believe the possibility of cultural resources being unearthed during construction. We request tribal monitors from Cahuilla be present during all ground disturbing activities including all surveys, soil testing, grubbing, grading and trenching and to be notified of all updates and/or changes with the project moving forward. We appreciate your help in preserving Tribal Cultural Resources in your project.

Respectfully,

BobbyRay Esparza
Cultural Coordinator
Cahuilla Band of Indians
Cell: (760)423-2773
Office: (951)763-5549
Fax:(951)763-2808



Sonia Sifuentes <sonia@materialcultureconsulting.com>

Fwd: Moreno Valley KIA Project

Tria Belcourt <tria@materialcultureconsulting.com>

Thu, Feb 28, 2019 at 11:52 AM

To: Sonia Sifuentes <sonia@materialcultureconsulting.com>, Julia Carvajal <julia@materialcultureconsulting.com>

Here is the one for the Kia dealership.

Thank you,

Tria Belcourt, M.A., RPA # 917250
President and Principal Archaeologist

Material Culture Consulting, Inc.
Certified DBE/WBE/SBE

2701-B North Towne Avenue
Pomona CA, 91767
Phone: 626-205-8279
Fax: 626-249-0479

www.materialcultureconsulting.com
tria@materialcultureconsulting.com

The content of this email, including attachments, is the confidential property of Material Culture Consulting. If you are not the intended recipient, please delete all copies and notify us immediately. Thank you.

----- Forwarded message -----

From: **Tribal Historic Preservation Office** <thpo@morongo-nsn.gov>

Date: Thu, Feb 28, 2019 at 11:23 AM

Subject: Moreno Valley KIA Project

To: Tria Belcourt <tria@materialcultureconsulting.com>

Hello,

Regarding the above referenced project, we have no information to provide to Material Cultural Consulting but will additional information during the AB 52 consultation process.

If the "cultural resources review" mentioned in the letter includes a survey, we ask to be notified in advance of the survey date.

Thank you for reaching out to our office.

Sincerely,

Travis Armstrong

Tribal Historic Preservation Officer

Morongo Band of Mission Indians

951-755-5259

Email: thpo@morongo-nsn.gov



March 12, 2019

Attn: Tria Belcourt, President, Principal Archaeologist
Material Culture Consulting, Inc.
2701-B North Towne Avenue
Pomona, CA 91767



RE: Proposed Moreno Valley Kia Project – intersection of Auto Mall Drive and Moreno Beach Drive, bounded by Auto Mall Drive to west/northwest, Moreno Beach Drive to the south, Pettit Street to the north, and a vacant lot east – City of Moreno Valley, Riverside County, CA

The Soboba Band of Luiseño Indians appreciates your observance of Tribal Cultural Resources and their preservation in your project. The information provided to us on said project has been assessed through our Cultural Resource Department, where it was concluded that although it is outside the existing reservation, the project area does fall within the bounds of our Tribal Traditional Use Areas. This project location is in proximity to known sites, is a shared use area that was used in ongoing trade between the tribes and is considered to be culturally sensitive by the people of Soboba.

Soboba Band of Luiseño Indians is requesting the following:

1. To initiate a consultation with the project proponents and lead agency.
2. The transfer of information to the Soboba Band of Luiseno Indians regarding the progress of this project should be done as soon as new developments occur.
3. Soboba Band of Luiseño Indians continues to act as a consulting tribal entity for this project.
4. Working in and around traditional use areas intensifies the possibility of encountering cultural resources during the construction/excavation phase. For this reason, the Soboba Band of Luiseño Indians requests that Native American Monitor(s) from the Soboba Band of Luiseño Indians Cultural Resource Department to be present during any ground disturbing proceedings. Including surveys and archaeological testing.
5. Request that proper procedures be taken, and requests of the tribe be honored (Please see the attachment)

Multiple areas of potential impact were identified during an in-house database search. Specifics to be discussed in consultation with the lead agency.

Sincerely,

A handwritten signature in black ink, appearing to read "JOE", with a long horizontal line extending to the right.

Joseph Ontiveros, Tribal Historic Preservation Officer
Soboba Band of Luiseño Indians
P.O. Box 487
San Jacinto, CA 92581
Phone (951) 654-5544 ext. 4137
Cell (951) 663-5279
jontiveros@soboba-nsn.gov

Cultural Items (Artifacts). Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer should agree to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.

The Developer should waive any and all claims to ownership of Native American ceremonial and cultural artifacts that may be found on the Project site. Upon completion of authorized and mandatory archeological analysis, the Developer should return said artifacts to the Soboba Band within a reasonable time period agreed to by the Parties and not to exceed (30) days from the initial recovery of the items.

Treatment and Disposition of Remains.

A. The Soboba Band shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and grave goods shall be treated and disposed of with appropriate dignity.

B. The Soboba Band, as MLD, shall complete its inspection within twenty-four (24) hours of receiving notification from either the Developer or the NAHC, as required by California Public Resources Code § 5097.98 (a). The Parties agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes.

C. Reburial of human remains shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The Soboba Band, as the MLD in consultation with the Developer, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains.

D. All parties are aware that the Soboba Band may wish to rebury the human remains and associated ceremonial and cultural items (artifacts) on or near, the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The Developer should accommodate on-site reburial in a location mutually agreed upon by the Parties.

E. The term "human remains" encompasses more than human bones because the Soboba Band's traditions periodically necessitated the ceremonial burning of human remains. Grave goods are those artifacts associated with any human remains. These items, and other funerary remnants and their ashes are to be treated in the same manner as human bone fragments or bones that remain intact

Coordination with County Coroner's Office. The Lead Agencies and the Developer should immediately contact both the Coroner and the Soboba Band in the event that any human remains are discovered during implementation of the Project. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c).

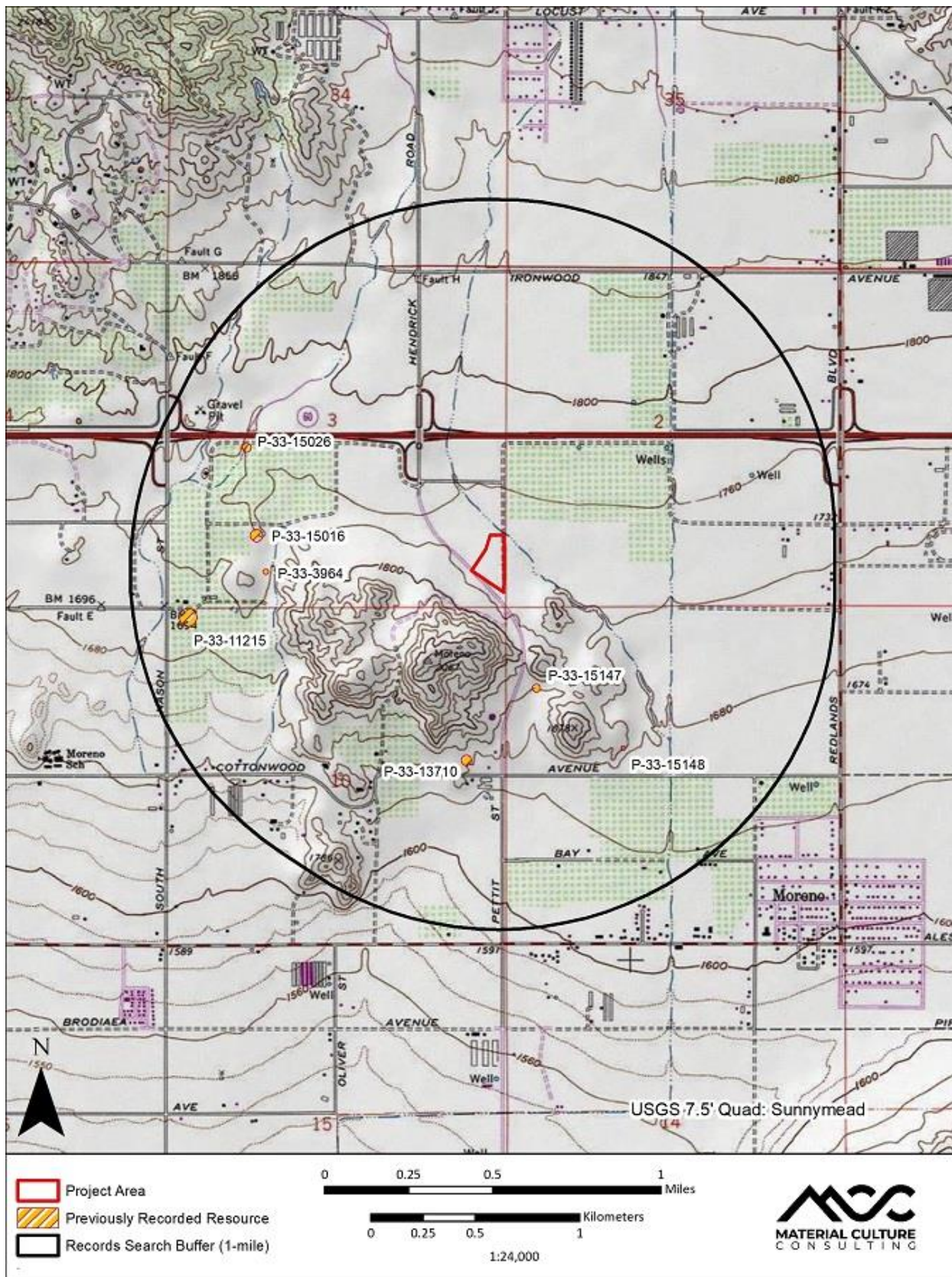
Non-Disclosure of Location Reburials. It is understood by all parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r). Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer agrees to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.



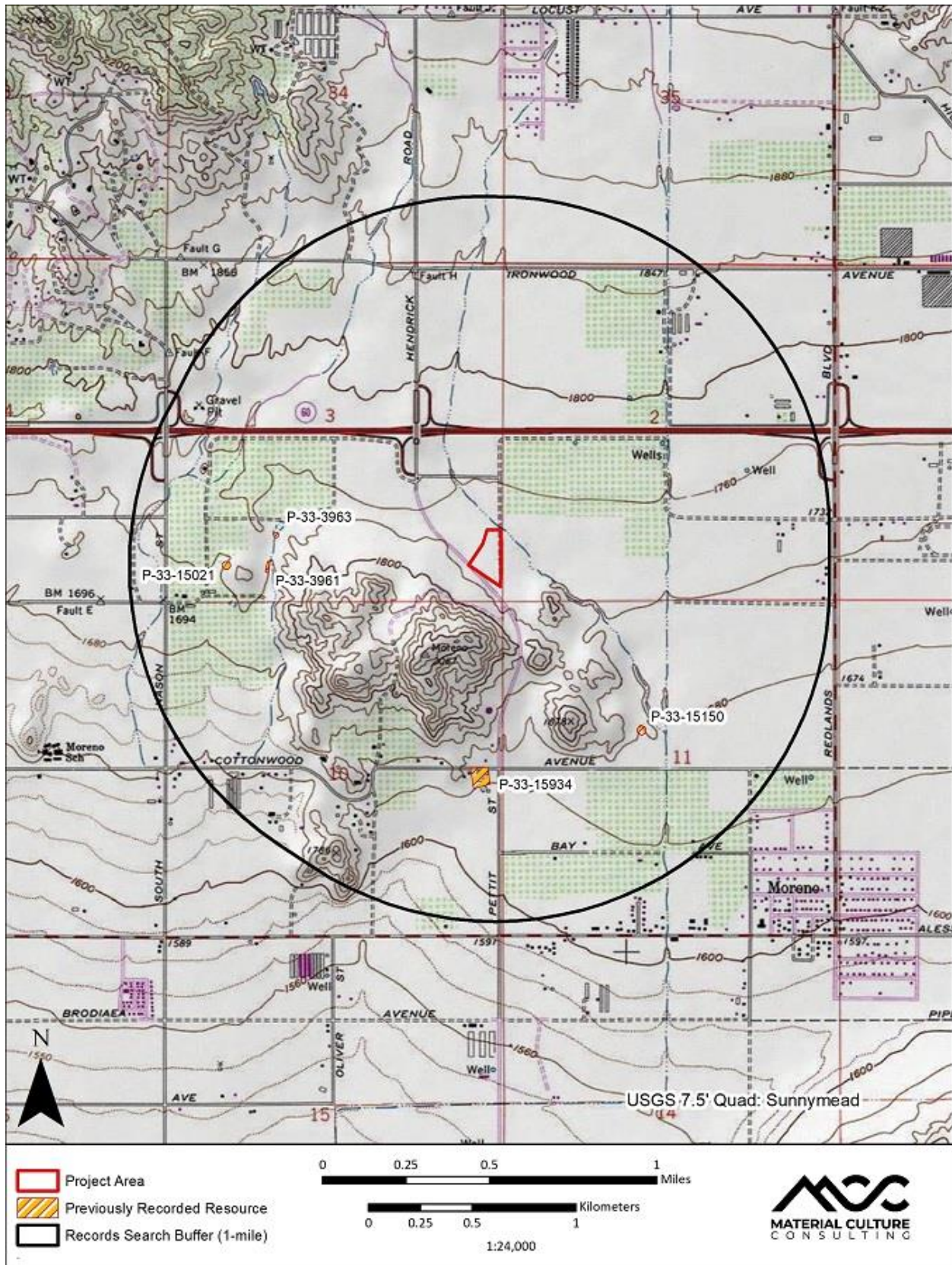
Confidentiality: The entirety of the contents of this letter shall remain confidential between Soboba and Material Culture Consulting, Inc. No part of the contents of this letter may be shared, copied, or utilized in any way with any other individual, entity, municipality, or tribe, whatsoever, without the expressed written permission of the Soboba Band of Luiseño Indians.

Appendix C:
NAHC Outreach and
Correspondence

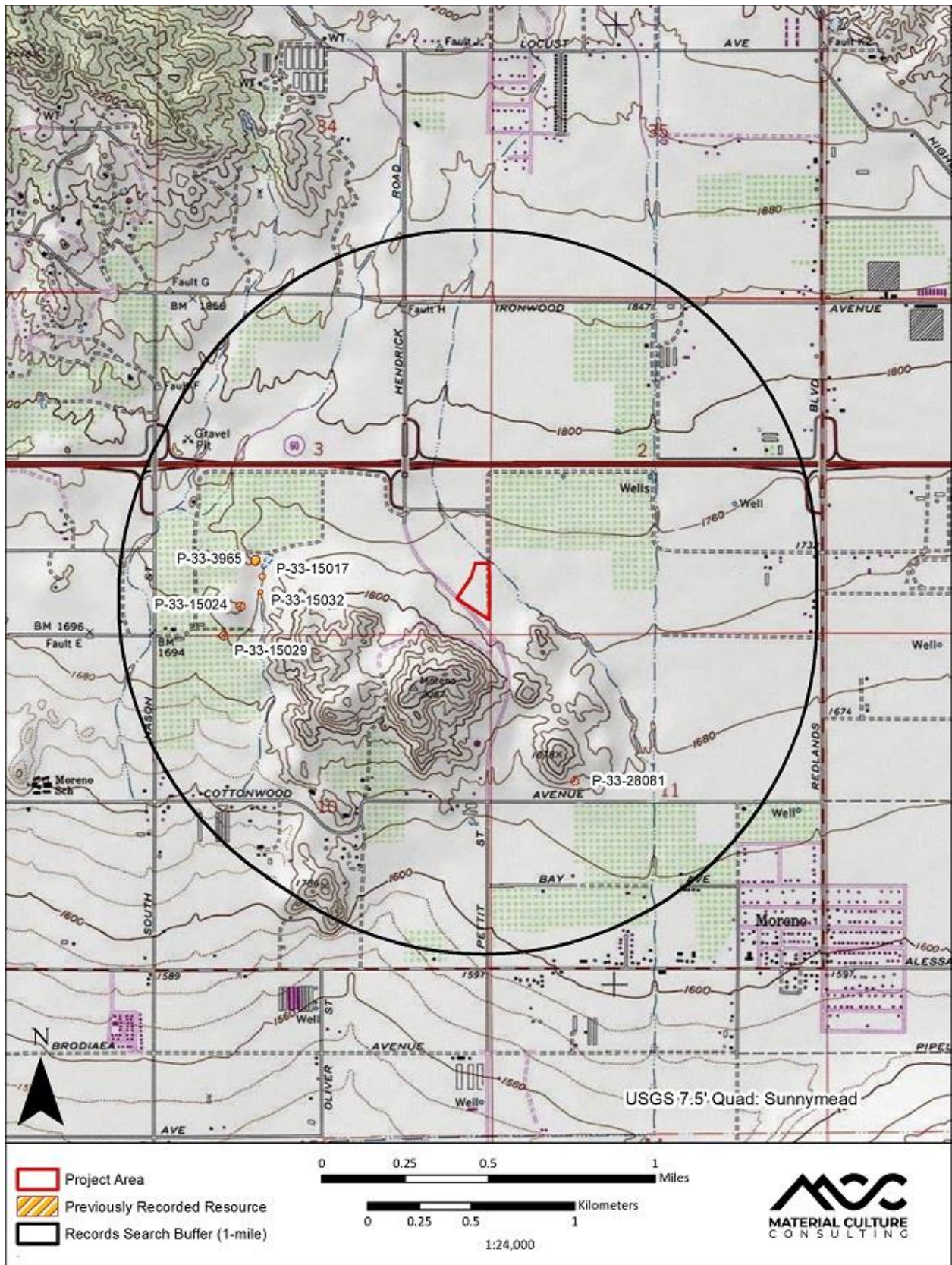
Record Search Results-Resources



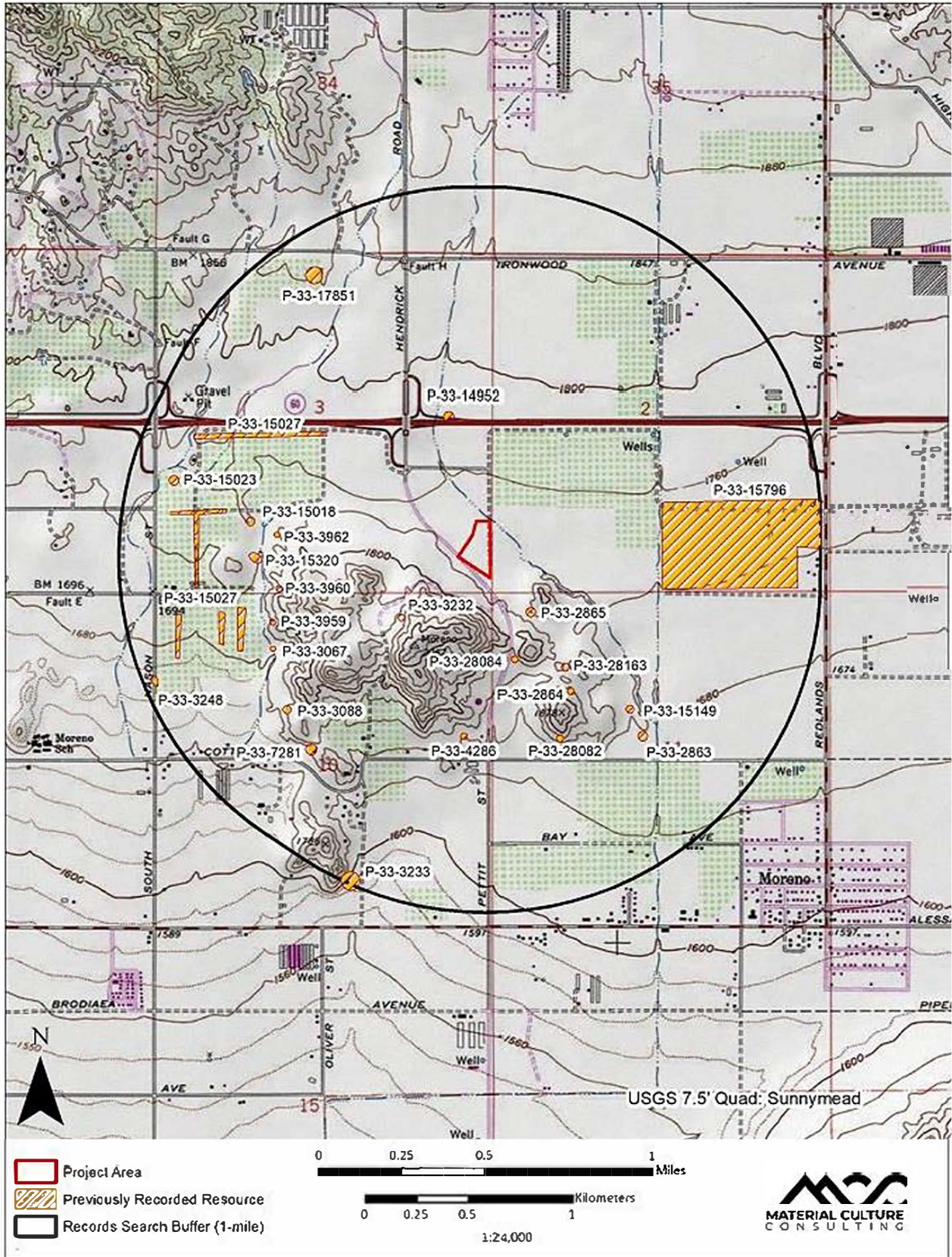
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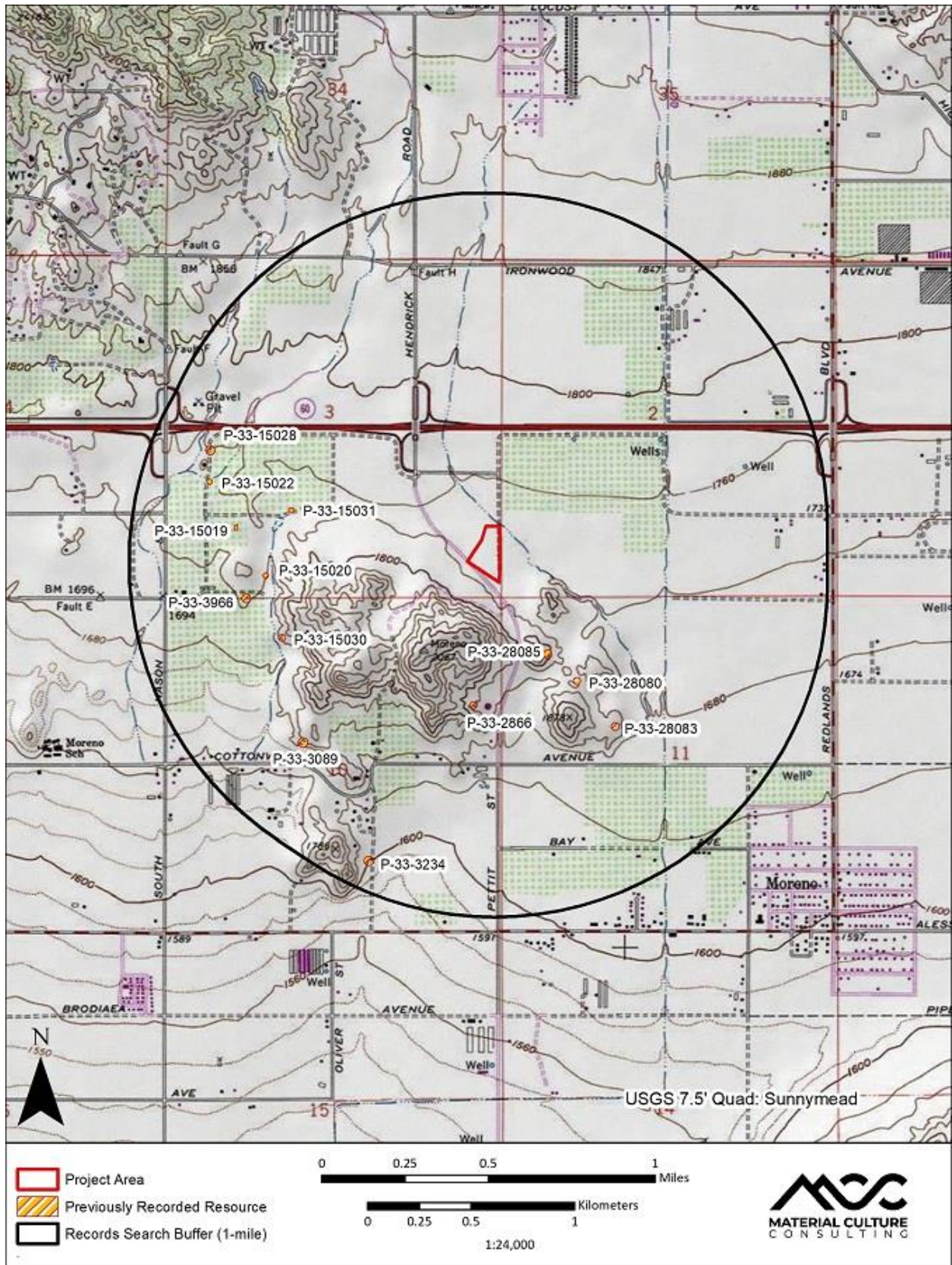
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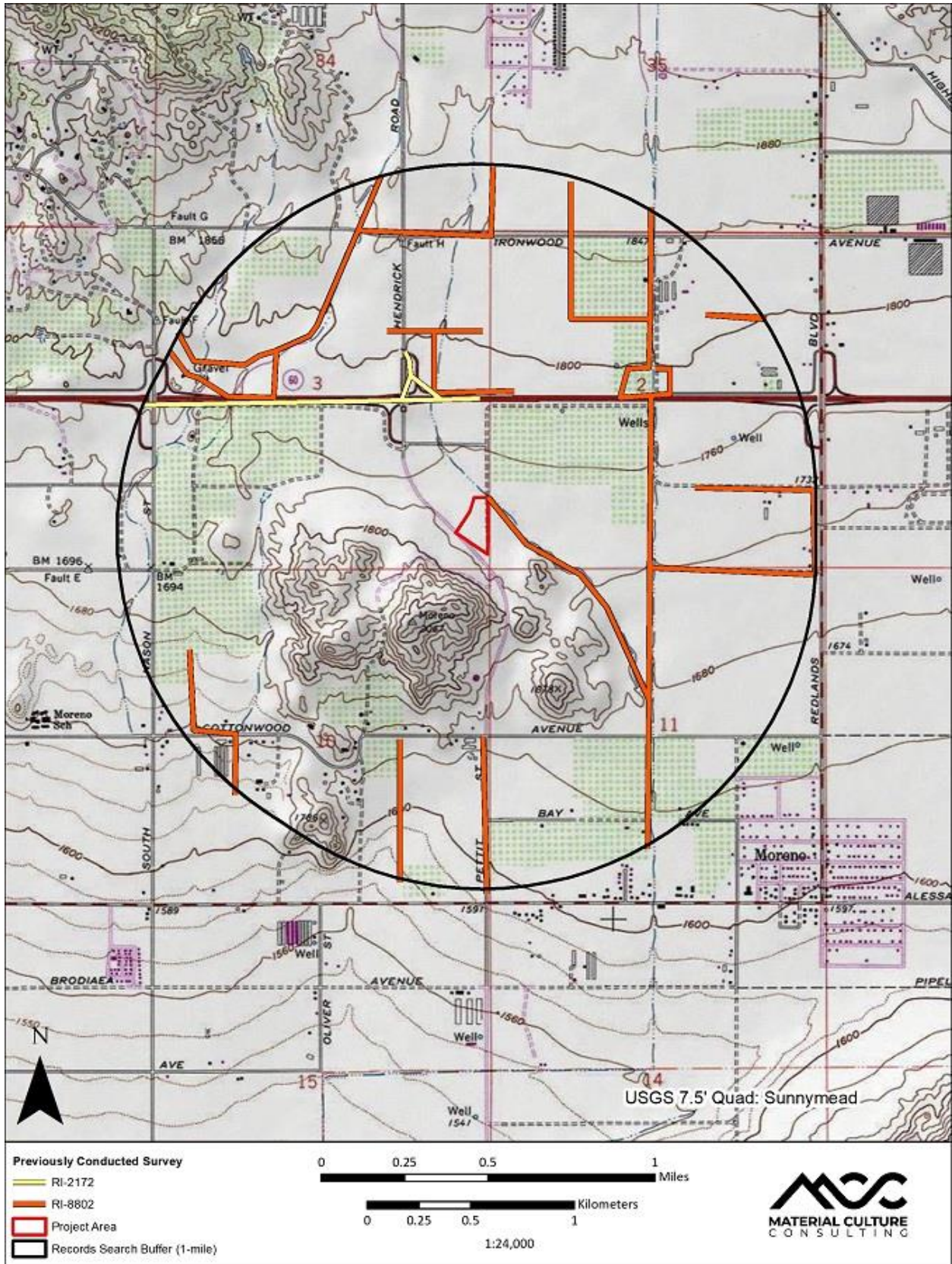
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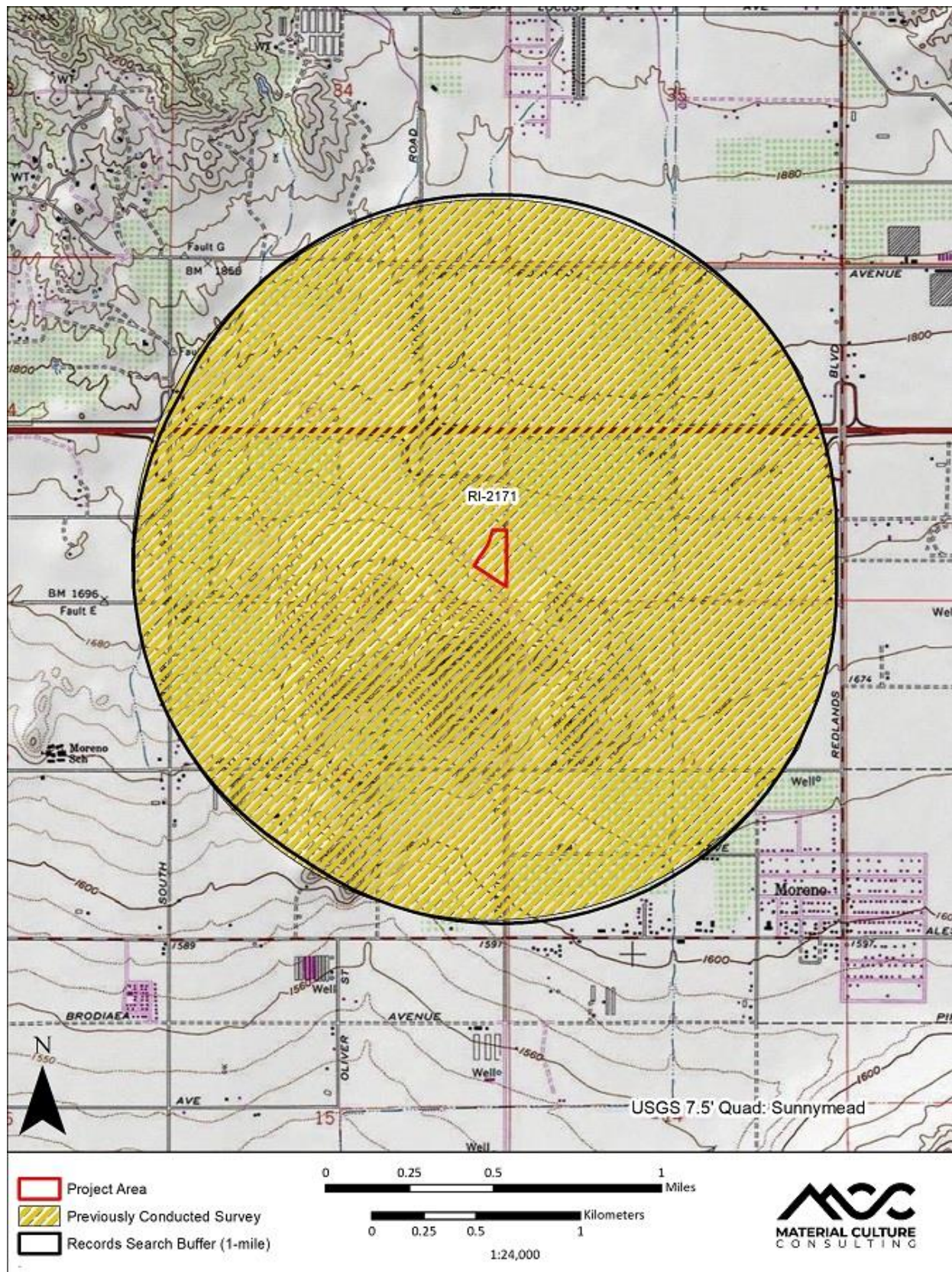
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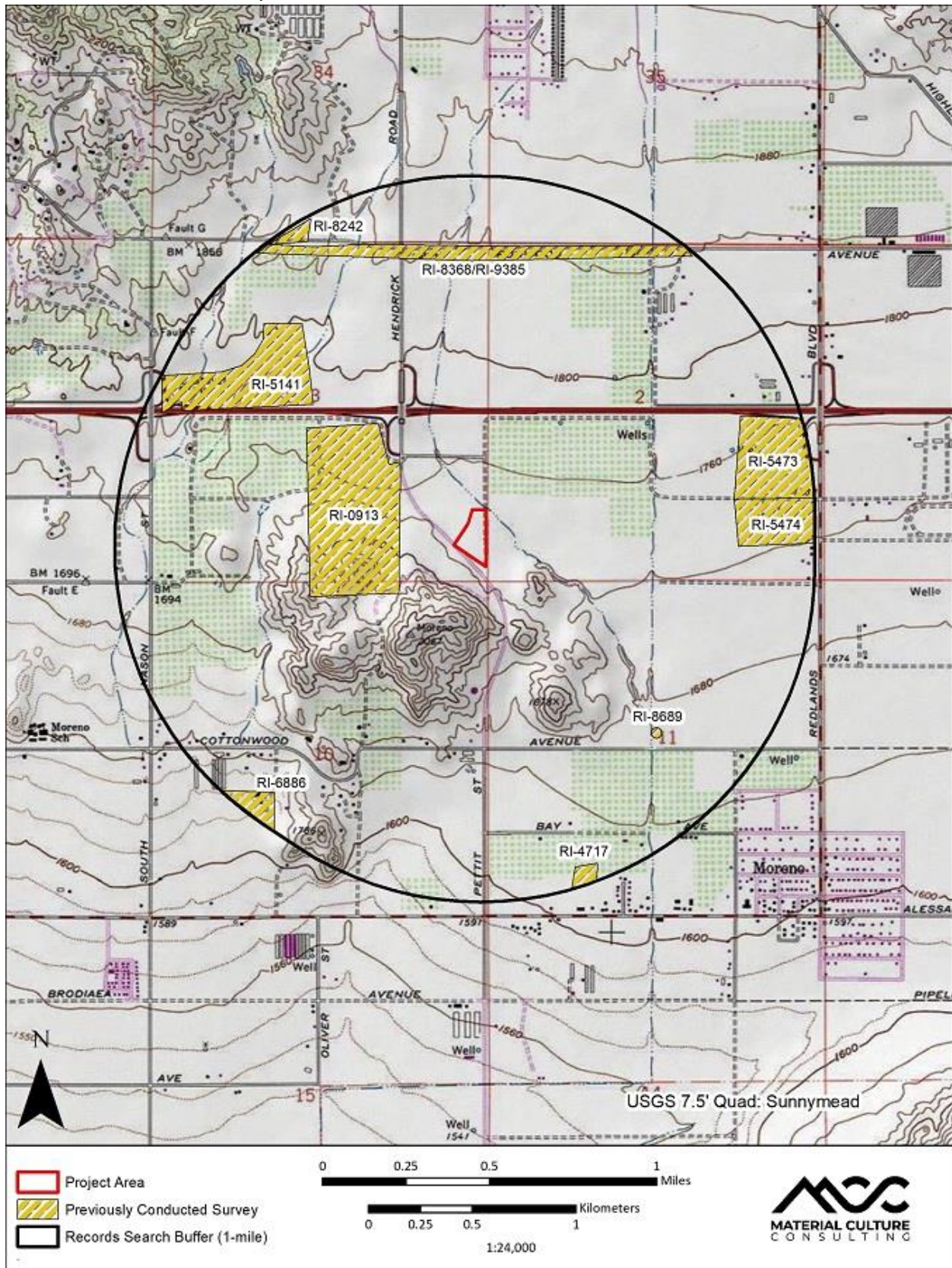
Record Search Results-Reports



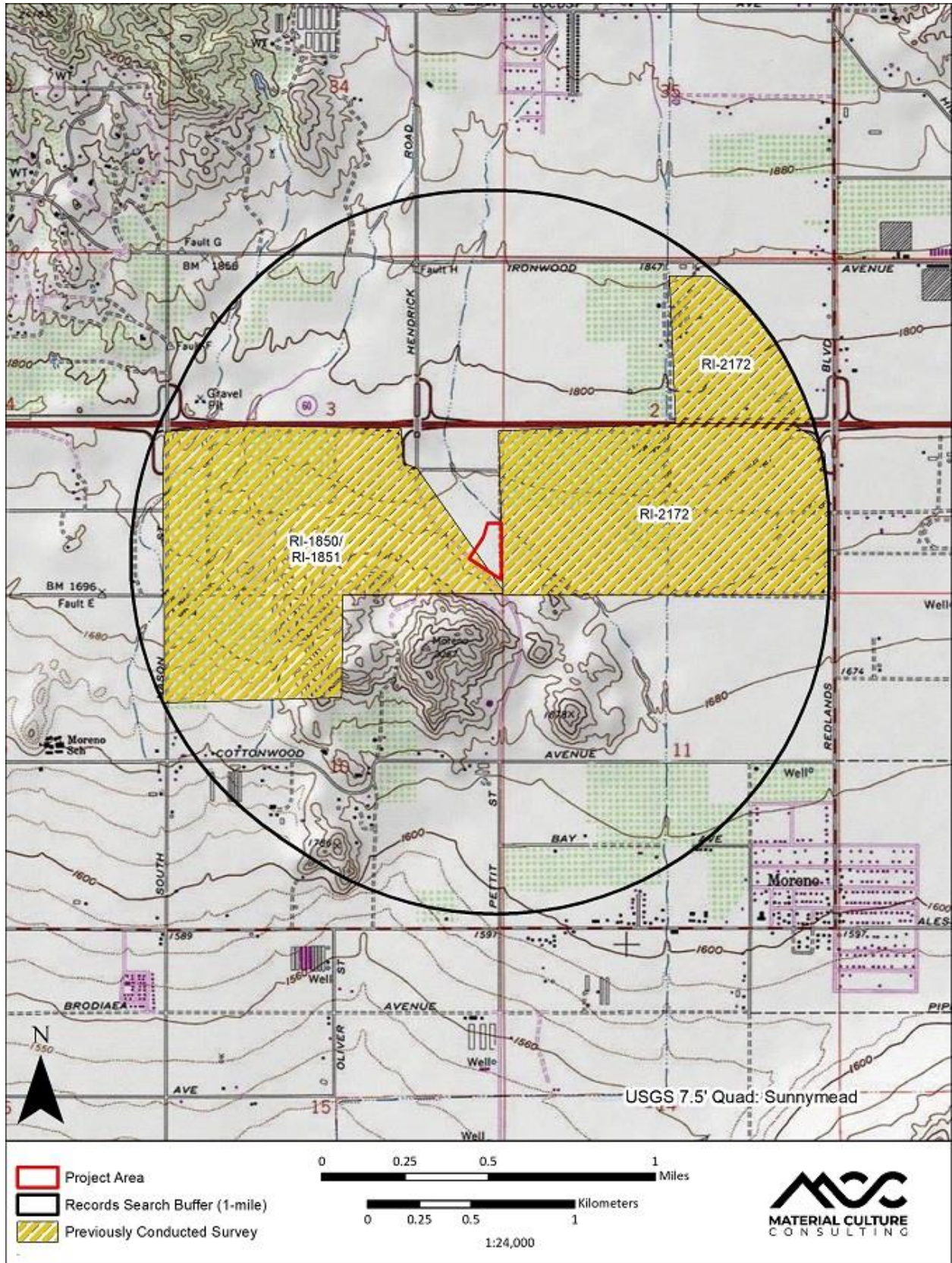
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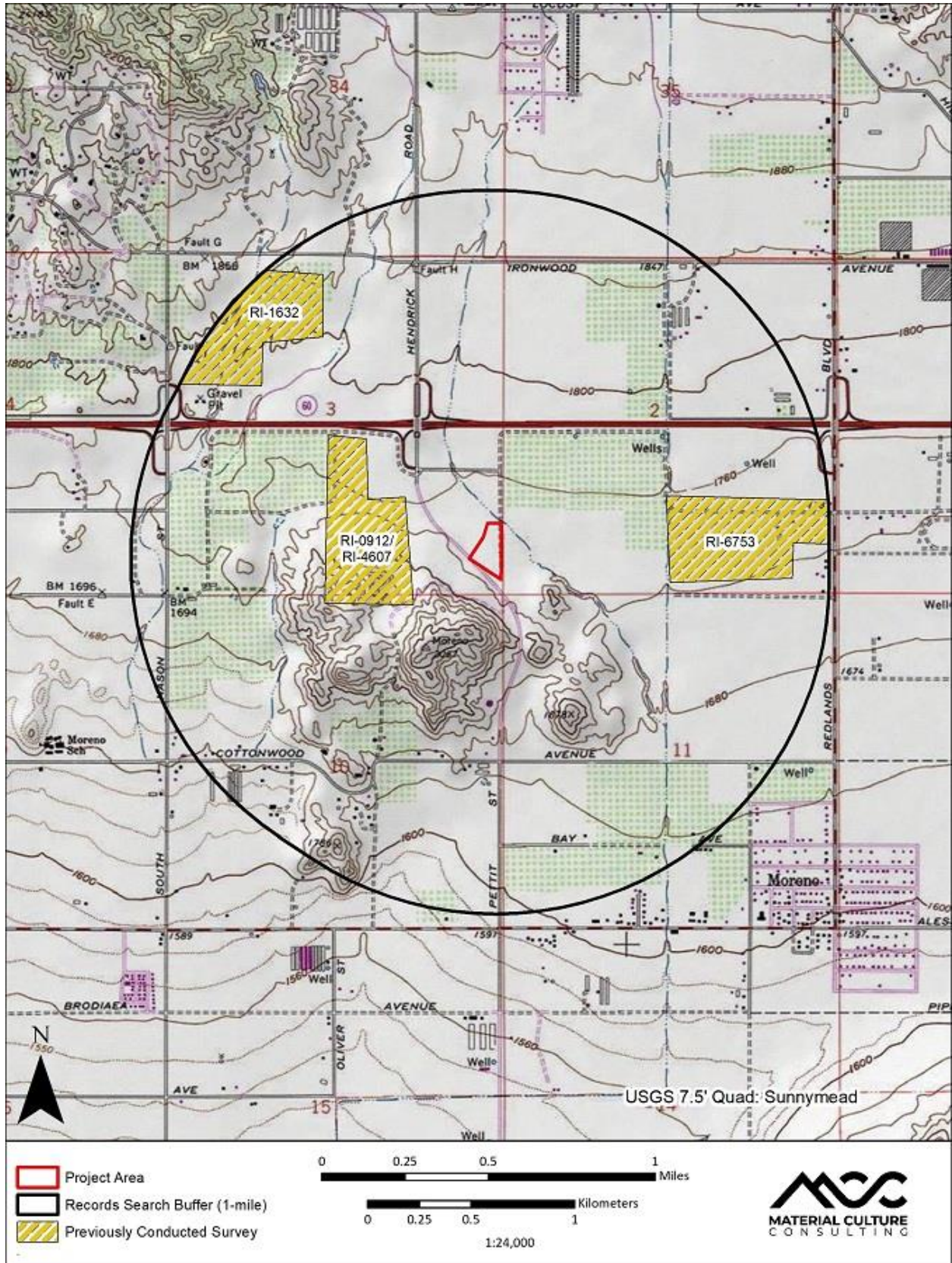
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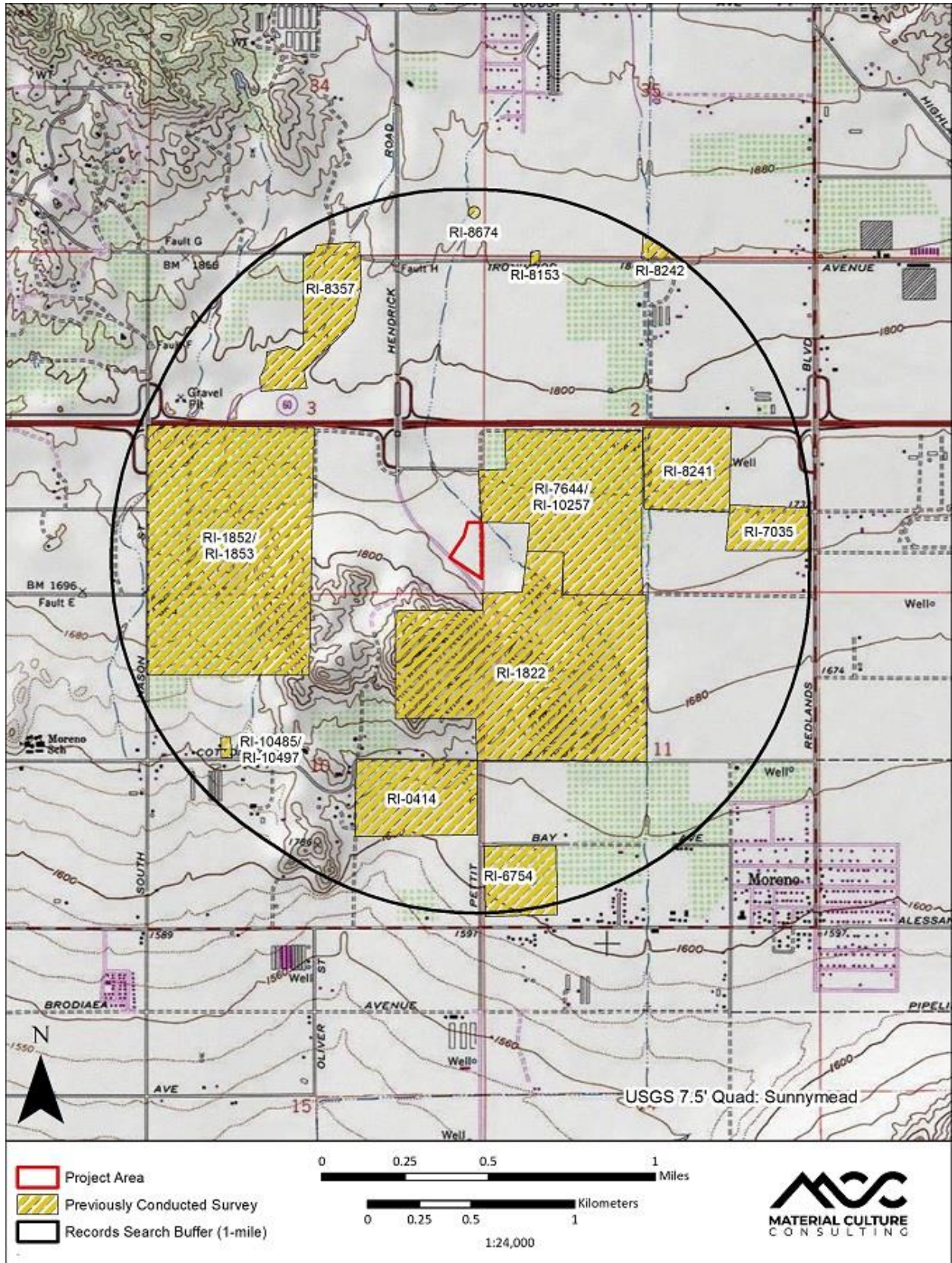
Record Search Results-Reports



Record Search Results-Reports



Record Search Results-Reports



APPENDIX D: GEOTECHNICAL INVESTIGATION AND PERCOLATION TEST RESULTS

GEOTECHNICAL INVESTIGATION AND PERCOLATION TEST RESULTS

**KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL WAY
MORENO VALLEY, CALIFORNIA**



GEOCON
WEST, INC.

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

**CAR PROS AUTOMOTIVE GROUP
FEDERAL WAY, WASHINGTON**

**JANUARY 18, 2019
PROJECT NO. T2844-22-01**

Project No. T2844-22-01
January 18, 2019

Cars Pros Automotive Group
181 S 333rd Street, Building C, Suite 210
Federal Way, Washington 98002

Attention: Mr. Ken Phillips

Subject: GEOTECHNICAL INVESTIGATION
AND PERCOLATION TEST RESULTS
KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

Dear Mr. Phillips:

In accordance with your authorization of Proposal No. IE-2287, Geocon West Inc. (Geocon) herein submits the results of our geotechnical investigation and percolation test results for the subject site. The accompanying report presents the results of our study and conclusions and recommendations pertaining to the geotechnical aspects of the proposed automotive sales lot. The site is considered suitable for development provided the recommendations of this report are followed.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON WEST, INC.

Paul D. Theriault
CEG 2374



Chet E. Robinson
GE 2890



PDT:CER:LAB:hd

(e-mail) Addressee

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RECOMMENDED GRADING SPECIFICATIONS

GEOTECHNICAL INVESTIGATION AND PERCOLATION TEST RESULTS

1. PURPOSE AND SCOPE

This report presents the results of our geotechnical investigation and percolation tests for the planned automotive sales development located east of the intersection of Moreno Beach Drive and Auto Mall Drive, in the city of Moreno Valley, California (see *Vicinity Map*, Figure 1). The purpose of the geotechnical investigation is to evaluate the surface and subsurface soil conditions and general site geology, and to identify geotechnical constraints that may affect development of the property. Percolation testing was performed to provide information for site storm water infiltration design. This investigation also included a review of readily available published and unpublished geologic literature (see *List of References*).

The scope of this investigation included performing a site reconnaissance, field exploration, engineering analyses, and preparing this report. We performed our field investigation on December 17 and 18, 2018 by drilling ten small-diameter borings to a maximum depth of 51½ feet below the existing ground surface. Four of the borings were used to perform percolation testing. The *Geologic Map*, Figure 2, presents the approximate locations of the borings. *Appendix A* provides a detailed discussion of the field investigation including logs of the borings and percolation test results. Details of the laboratory tests and a summary of the test results are presented in *Appendix B* and on the boring logs in *Appendix A*.

Recommendations presented herein are based on analyses of data obtained from our site investigation and our understanding of proposed site development. References reviewed to prepare this report are provided in the *List of References*. If project details vary significantly from those described herein, Geocon should be contacted to evaluate the necessity for review and possible revision of this report.

2. SITE AND PROJECT DESCRIPTION

The subject site is located southeast of the intersection of Moreno Beach Drive and Auto Mall Drive in the city of Moreno Valley, California. The site is bounded on the west by Auto Mall Drive, the north by Pettit Street, the south by Moreno Beach Drive, and on the east by a parcel line. The site is currently vacant and appears to be periodically disked for weed abatement. Periodic use of the site as a parking lot was observed during our site exploration. Access to the site is from Pettit Street and Auto Mall Drive. The existing grades range from approximate elevation 1,750 feet above Mean Sea Level (MSL) in the north to 1,755 feet above MSL in the south. A stockpile is located in the southern portion of the site, as shown on Figure 2. The maximum height of the stockpile is approximately 5 feet. The site is at latitude 33.93375 and longitude -117.17466.

Based on the *Site Plan*, prepared by Carlile Coatsworth Architects, Inc., we understand that the proposed construction consists of an approximately 44,000-square-foot sales and service facility, car wash, several vehicle display areas, with associated parking and infrastructure. A grading plan has not been provided for our review; however, based on current site conditions, cuts and fills of less than 10 feet are expected at the site.

Based on the preliminary plans, we understand that the proposed building will be constructed of concrete masonry unit (CMU) walls and concrete, split face block and supported on conventional spread footing foundations with a concrete slab-on-grade floor. We expect column loads will be up to 100 kips and wall loads will be up to 10 kips per linear foot. Preliminary geotechnical recommendations for design of the structure are based on these assumptions and provided herein.

The site descriptions and proposed development are based on a site reconnaissance, review of published geologic literature, our field investigation, a review of the conceptual plans, and discussions with you. If development plans differ from those described herein, Geocon should be contacted for review of the plans and possible revisions to this report.

3. GEOLOGIC SETTING

The site is located within the Perris block of the northern Peninsular Ranges Geomorphic Province (Province), defined as a relatively stable area between the Elsinore and San Jacinto fault zones. In the vicinity of the site, the geomorphology consists of older alluvial fan deposits. The Peninsular Ranges are bounded by the Transverse Ranges (San Gabriel and San Bernardino Mountains) to the north and the Colorado Desert Geomorphic Province to the east. The Peninsular Ranges Geomorphic Province extends westward into the Pacific Ocean and southward to the tip of Baja California. Overall, the Province is characterized by Cretaceous-age granitic rock and a lesser amount of Mesozoic-age metamorphic rock overlain by terrestrial and marine sediments. Faulting within the Province is typically northwest trending and includes the San Andreas, San Jacinto, Elsinore, and Newport-Inglewood faults.

The San Jacinto fault zones is located approximately 1.8 miles to the northeast. Geologic units within the site consist of very old alluvial fan deposits and a stockpile of undocumented fill.

4. SOIL AND GEOLOGIC CONDITIONS

We observed very old alluvial fan deposits with a thin mantle of overlying undocumented fill during our field investigation. The occurrence, distribution and description of the geologic units encountered are shown on the *Geologic Map*, Figure 2 and the boring logs in *Appendix A*. The surficial soils and geologic units are described herein in order of increasing age.

4.1 Undocumented Fill (afu)

Undocumented fill was observed throughout the site in the top 1 to 4 feet of the borings during our geotechnical investigation. The stockpile of undocumented fill in the south-central portion of the site was observed to be approximately 5 feet thick. As observed the undocumented fill consists of loose to medium dense, dry to damp, reddish brown silty sand. A minor amount of clayey sand was also encountered.

4.2 Very Old Alluvial Fan Deposits (Qvof)

Very old alluvium was observed underlying the undocumented fill through the site. As observed, the older alluvium consists predominately of damp to moist, medium dense to very dense silty sand. Lesser amounts of clayey sand, sandy silt, and sandy clay was also encountered.

5. GROUNDWATER

We did not encounter groundwater or seepage during the site investigation. According to the California Department of Water Resources, several wells in the area indicated a depth to groundwater in excess of 190 feet below the existing ground surface. It is not uncommon for seepage conditions to develop where none previously existed. Groundwater and seepage are dependent on seasonal precipitation, irrigation, land use, among other factors, and varies as a result. Proper surface drainage will be important to future performance of the project.

6. GEOLOGIC HAZARDS

6.1 Faulting

The numerous faults in southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey (CGS, formerly known as CDMG) for the Alquist-Priolo Earthquake Fault Zone Program (Bryant and Hart, 2007). By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,000 years). A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years) but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The site is not within a currently established State of California Alquist-Priolo Earthquake Fault Zone or a Riverside County Fault Hazard Zone for surface fault rupture hazards. No active or potentially active faults with the potential for surface fault rupture are known to pass directly beneath the site.

According to the *Fault Activity Map of California* (2010), 18 known active faults are located within a search radius of 50 miles from the property. The nearest known active fault is the Claremont fault segment of the San Jacinto fault zone, located approximately 2 miles west of the site, and is the dominant source of potential ground motion. Earthquakes that might occur on these fault zones or other faults within the southern California and northern Baja California area are potential generators of significant ground motion at the site. Table 6.1.1 lists the estimated maximum earthquake magnitude for the most dominant faults in relationship to the site location.

**TABLE 6.1.1
KNOWN ACTIVE FAULTS WITHIN 50 MILES OF THE SITE**

Fault Name	Maximum Earthquake Magnitude (Mw)	Distance from Site (miles)	Direction from Site
San Jacinto (Claremont)	6.7	2	NE
San Jacinto (Casa Loma)	6.9	2.8	E
San Geronio Pass	7.6	8	E
Banning	7.2	10	SE
San Andreas (San Bernardino)	8.2	12	NE
San Jacinto	7.8	13	N
San Jacinto (Glen Helen)	6.7	13	N
Elsinore (Main Street)	6.7	21	W
Chino	6.7	22	W
Elsinore (Glen Ivy North)	6.8	23	WSW
Elsinore (Whittier)	6.9	24	W
Morongo Valley	7.2	28	E
Pinto Mountain	7.3	35	E
San Andreas Fault (South Branch)	8.2	40	SE
Burt Mountain	6.8	41	ENE
San Jacinto (Clark)	6.8	43	N
San Andreas Fault (North Branch)	8.2	47	N
Newport-Inglewood	7.5	50	SW

Historic earthquakes in southern California of magnitude 6.0 and greater, their magnitude, distance, and direction from the site are listed in Table 6.1.2.

**TABLE 6.1.2
HISTORIC EARTHQUAKE EVENTS WITH RESPECT TO THE SITE**

Earthquake (Oldest to Youngest)	Date of Earthquake	Magnitude	Distance to Epicenter (Miles)	Direction to Epicenter
San Jacinto	December 25, 1899	6.7	16	SE
San Jacinto	April 21, 1918	6.8	16	SE
Loma Linda Area	July 22, 1923	6.3	6	NW
Long Beach	March 10, 1933	6.4	50	WSW
Buck Ridge	March 25, 1937	6.0	64	ESE
Imperial Valley	May 18, 1940	6.9	51	E
Desert Hot Springs	December 4, 1948	6.0	45	E
Arroyo Salada	March 19, 1954	6.4	77	E
Borrego Mountain	April 8, 1968	6.5	84	SE
San Fernando	February 9, 1971	6.6	84	WNW
Joshua Tree	April 22, 1992	6.1	54	E
Landers	June 28, 1992	7.3	50	ENE
Big Bear	June 28, 1992	6.4	29	NE
Northridge	January 17, 1994	6.7	88	WNW
Hector Mine	October 16, 1999	7.1	73	NE

6.2 Ground Rupture

Ground surface rupture occurs when movement along a fault is sufficient to cause a gap or rupture where the upper edge of the fault zone intersects the earth surface. The potential for ground rupture is considered to be very low due to the absence of active or potentially active faults at the subject site.

6.3 Liquefaction

Liquefaction typically occurs when a site is located in a zone with seismic activity, onsite soils are cohesionless or silt/clay with low plasticity, groundwater is encountered within 50 feet of the surface, and soil has a relative density less than about 70 percent. If the four previous criteria are met, a seismic event could result in a rapid pore water pressure increase from the earthquake-generated ground accelerations. Due to the lack of a permanent, near-surface groundwater table and the dense to very dense nature of the old alluvial fan deposits, liquefaction potential for the site is negligible and not a design consideration.

6.4 Expansive Soil

The older alluvium generally consists of silty or clayey sands with lesser amounts of sandy silts and sandy clays. Laboratory testing results indicate samples of the near surface soils exhibits a “very low” expansion potential (expansion index [EI] of 20 or less) with test results showing expansion index of 3.

6.5 Hydrocompression

Hydrocompression is the tendency of unsaturated soil structure to collapse upon wetting resulting in the overall settlement of the affected soil and overlying foundations or improvements supported thereon. Potentially compressible soils underlying the site are typically removed and recompacted during remedial site grading. However, if compressible soil is left in-place, a potential for settlement due to hydrocompression of the soil exists.

Soils obtained during our investigation were tested for hydrocompression and exhibited a collapse potential up to 2.2 percent when loaded to the expected post-grading pressures. The test results indicate that the soils are classified as having a “slight” (0.1 to 2.0 percent) to “moderate” (2.1 to 6.0) degree of specimen collapse in accordance with ASTM D5333.

6.6 Seiches and Tsunamis

Seiches are caused by the movement of an inland body of water due to the movement from seismic forces. The site is located approximately 5.1 miles north of Lake Perris. In the unlikely event of a seiche, water is anticipated to be confined to the young alluvial valley channel south of the site.

A tsunami is a series of long-period waves generated in the ocean by a sudden displacement of large volumes of water. Causes of tsunamis include underwater earthquakes, volcanic eruptions, or offshore slope failures. The site is located approximately 36 miles from the Pacific Ocean at an elevation greater than 1,500 feet MSL. Therefore, the risk of tsunamis affecting the site is negligible and not a design consideration.

6.7 Inundation

According to the State of California, Department of Water Resources, *Inundation Map for Perris Dam*, dated April 29, 1975, the site is not within an inundation zone due to dam failure. Therefore, inundation due to dam failure is not a design consideration.

6.8 Landslides

Landslides are not mapped on or near the site. Due to the relatively level topography at the site, the potential for landslides at the property or at a location that could impact the site is negligible and not a design consideration.

6.9 Rock Fall Hazards

Rock falls are not a design consideration due to the lack of natural bedrock slopes above and adjacent to the site.

6.10 Slope Stability

Based on the preliminary site plans and relatively level topography at the site, cut and fill slopes are anticipated to be less than 5 feet in height at inclinations no steeper than 2:1 (h:v). In general, permanent, cut slopes and graded fill slopes constructed with on-site soils inclined no steeper than 2:1 (h:v) with vertical heights of 5 feet or less are anticipated to have adequate factors of safety. Fill keys should be constructed in accordance with the standard grading specifications in *Appendix C*. Grading of fill slopes should be designed in accordance with the requirements of Moreno Valley and the 2016 California Building Code (CBC).

7. SITE INFILTRATION

Percolation testing was performed in accordance with the procedures in *Riverside County Flood Control and Water Conservation District LID BMP, Appendix A*. The percolation test locations are depicted on the *Geologic Map* (see Figures 2 and 3).

A 3-inch diameter perforated PVC pipe in silt filter sock was placed in each percolation test hole and approximately 2 inches of gravel was placed at the bottom of the PVC pipe. The test locations were pre-saturated prior to testing. Percolation testing was begun within 24 hours after the holes were presaturated. Percolation data sheets are presented in *Appendix A* of this report. Calculations to convert the percolation test rate to infiltration test rates are presented in Table 7.0 below. Note that the Handbook requires a factor of safety of 3 be applied to the values below based on the test method used.

**TABLE 7.0
INFILTRATION TEST RATES FOR PERCOLATION AREAS**

Parameter	P-1	P-2	P-3	P-4
Depth (inches)	91.2	79.0	117.4	120.0
Test Type	Normal	Normal	Normal	Normal
Change in head over time: ΔH (inches)	0.1	1.1	0.1	0.5
Average head: H_{avg} (inches)	41.6	11.9	41.0	24.6
Time Interval (minutes): Δt (minutes)	30	30	30	30
Radius of test hole: r (inches)	4	4	4	4
Tested Infiltration Rate: I_t (inches/hour)	0.01	0.31	0.01	0.07

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 General

- 8.1.1 From a geotechnical engineering standpoint, the site is suitable for construction of the proposed auto facility development provided the recommendations presented herein are implemented in design and construction of the project.
- 8.1.2 Potential geologic hazards at the site include seismic shaking and hydrocompression.
- 8.1.3 The site is located approximately 2 miles from the nearest active fault. Based on our background research and previous investigation, it is our opinion active, potentially active, or inactive faults do not extend across the site. Risks associated with seismic activity consist of the potential for moderate to strong seismic shaking.
- 8.1.4 Our field investigation indicates the site is blanketed by undocumented fill over very old alluvium. The undocumented fill and upper portion of the very old alluvium are not considered suitable for the support of compacted fill and settlement-sensitive structures. Remedial grading of the surficial soil will be required as discussed herein. The existing site soils are suitable for re-use as engineered fill provided the recommendations in the *Grading* section of this report are followed.
- 8.1.5 Soil samples tested for hydrocompression exhibit a collapse potential of up to 2.2 percent for the site. The test results indicate that the degree of specimen collapse would be classified as “moderate” (2.1 to 6.0 percent), in accordance with ASTM D 5333. Remedial grading will assist in reducing the collapse potential of the near-surface soils. However, precautionary measures will be needed to mitigate the potential for hydrocompression of deeper soils. Proper site drainage should be maintained. Landscape planters that saturate the subsurface or storm water infiltration structures should not be used within 20 feet of the proposed building or other on grade improvements. Localized surface settlement should be expected in the vicinity of the storm water infiltration structures or other areas where water is allowed to infiltrate to the subsurface.
- 8.1.6 Moisture contents in the borings varied and the upper portions were below optimum moisture content. Moisture conditioning of the soils should be expected during construction. Special handling of the soil should be anticipated, particularly if grading occurs during the rainy season.

- 8.1.7 Although the majority of on-site soils consist of silty and clayey sands, some granular material, having little to no cohesion and subject to caving in unshored excavations, should be expected at the site. It is the responsibility of the contractor to ensure that excavations and trenches are properly shored and maintained in accordance with OSHA rules and regulations to maintain the stability of adjacent existing improvements.
- 8.1.8 The laboratory tests indicate that the site soils are non-expansive and have a “very low” expansion potential. If medium to highly expansive soils are encountered at the site, they should be exported from the site or selectively graded and placed in the deeper fill areas to allow for the placement of low expansion material at the finish pad grade.
- 8.1.9 Grading plans were not available for our review, however, cuts and fill of less than 10 feet are anticipated to achieve planned finish grades.
- 8.1.10 Although not encountered in our exploration, cobbles may be encountered during site grading and may present difficulty for site excavations. The contractor should be prepared to perform site excavations in these conditions.
- 8.1.11 We did not encounter groundwater during our investigation and do not expect groundwater would impact site improvements. However, wet conditions and seepage could affect proposed construction if grading and improvement operations occur during or shortly after a rain event.
- 8.1.12 Proper drainage should be maintained in order to preserve the design properties of the fill in the sheet-graded pad and slope areas.
- 8.1.13 The planned structures can be supported on a shallow foundation system with a slab-on-grade floor system.
- 8.1.14 Changes in the design, location or elevation of improvements, as outlined in this report, should be reviewed by this office. Once final grading plans become available, they should be reviewed by this office to evaluate the necessity for review and possible revision of this report.
- 8.1.15 Recommended grading specifications are provided in *Appendix C*.

8.2 Excavation and Soil Characteristics

8.2.1 Excavation of the very old alluvium should be possible with moderate to heavy effort using conventional heavy-duty equipment.

8.2.2 The soil encountered in the field investigation is considered to be “non-expansive” (expansion index [EI] of less than 20) as defined by 2016 California Building Code (CBC) Section 1803.5.3. Table 8.2.2 presents soil classifications based on the expansion index. Based on the laboratory test results, we expect a majority of the soil encountered will possess a “very low” expansion potential (EI between 0 and 20). Medium to highly expansive soils may be encountered at the site and should not be placed within 4 feet of the proposed foundations, flatwork or paving improvements. Additional testing for expansion potential should be performed during grading and once final grades are achieved.

**TABLE 8.2.2
EXPANSION CLASSIFICATION BASED ON EXPANSION INDEX**

Expansion Index (EI)	ASTM D 4829 Expansion Classification	2016 CBC Expansion Classification
0 – 20	Very Low	Non-Expansive
21 – 50	Low	Expansive
51 – 90	Medium	
91 – 130	High	
Greater Than 130	Very High	

8.2.3 We performed laboratory tests on samples of the site materials to evaluate the percentage of water-soluble sulfate content. *Appendix B* presents results of the laboratory water-soluble sulfate content tests. The test results indicate the on-site materials at the location tested possess a sulfate content of 0.001 percent (10 parts per million [ppm]) equating to an exposure class of “S0” as defined by 2016 CBC Section 1904.3 and ACI 318. Table 8.2.3 presents a summary of concrete requirements set forth by 2016 CBC Section 1904.3 and ACI 318. The presence of water-soluble sulfates is not a visually discernible characteristic; therefore, other soil samples from the site could yield different concentrations. Additionally, over time landscaping activities (i.e., addition of fertilizers and other soil nutrients) may affect the concentration.

**TABLE 8.2.3
REQUIREMENTS FOR CONCRETE EXPOSED TO
SULFATE-CONTAINING SOLUTIONS**

Exposure Class	Water-Soluble Sulfate (SO ₄) Percent by Weight	Cement Type (ASTM C 150)	Maximum Water to Cement Ratio by Weight ¹	Minimum Compressive Strength (psi)
S0	SO ₄ <0.10	No Type Restriction	n/a	2,500
S1	0.10≤SO ₄ <0.20	II	0.50	4,000
S2	0.20≤SO ₄ ≤2.00	V	0.45	4,500
S3	SO ₄ >2.00	V+Pozzolan or Slag	0.45	4,500

¹ Maximum water to cement ratio limits do not apply to lightweight concrete

8.2.4 Laboratory testing indicates the site soils have a minimum electrical resistivity of 4,600 ohm-cm, possess 98 ppm chloride, 10 ppm sulfate, and a pH of 8.3. As shown in Table 8.2.4 below, the site would not be classified as “corrosive” to buried improvements, in accordance with the Caltrans Corrosion Guidelines (Caltrans, 2018).

**TABLE 8.2.4
CALTRANS CORROSION GUIDELINES**

Corrosion Exposure	Resistivity (ohm-cm)	Chloride (ppm)	Sulfate (ppm)	pH
Corrosive	<1,100	500 or greater	1,500 or greater	5.5 or less

8.2.5 Geocon does not practice in the field of corrosion engineering. Therefore, further evaluation by a corrosion engineer may be performed if improvements that could be susceptible to corrosion are planned.

8.3 Seismic Design Criteria

8.3.1 We used the computer program *U.S. Seismic Design Maps*, provided by the California Office of Statewide Health Planning and Development (OSHPD) to evaluate the seismic design criteria. Table 8.3.1 summarizes site-specific design criteria obtained from the 2016 California Building Code (CBC; Based on the 2015 International Building Code [IBC] and ASCE 7-10), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The short spectral response uses a period of 0.2 second. The building structure and improvements as currently proposed should be designed using a Site Class D in accordance with ASCE 7-10 Section 20.3.1. We evaluated the Site Class based on the discussion in Section 1613.3.2 of the 2016 CBC and Table 20.3-1 of ASCE 7-10 using blow count data presented on the boring logs in *Appendix A*. The values presented in Table 8.3.1 are for the risk-targeted maximum considered earthquake (MCE_R).

**TABLE 8.3.1
2016 CBC SEISMIC DESIGN PARAMETERS**

Parameter	Value	2016 CBC Reference
Site Class	D	Section 1613.3.2
MCE _R Ground Motion Spectral Response Acceleration – Class B (short), S _S	2.146g	Figure 1613.3.1(1)
MCE _R Ground Motion Spectral Response Acceleration – Class B (1 sec), S ₁	0.971g	Figure 1613.3.1(2)
Site Coefficient, F _A	1.00	Table 1613.3.3(1)
Site Coefficient, F _V	1.50	Table 1613.3.3(2)
Site Class Modified MCE _R Spectral Response Acceleration (short), S _{MS}	2.146g	Section 1613.3.3 (Eqn 16-37)
Site Class Modified MCE _R Spectral Response Acceleration (1 sec), S _{M1}	1.457g	Section 1613.3.3 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (short), S _{DS}	1.431g	Section 1613.3.4 (Eqn 16-39)
5% Damped Design Spectral Response Acceleration (1 sec), S _{D1}	0.971g	Section 1613.3.4 (Eqn 16-40)

8.3.2 Table 8.3.2 presents additional seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-10 for the mapped maximum considered geometric mean (MCE_G).

**TABLE 8.3.2
2016 CBC SITE ACCELERATION PARAMETERS**

Parameter	Value	ASCE 7-10 Reference
Site Class	D	Section 1613.3.2
Mapped MCE _G Peak Ground Acceleration, PGA	0.83g	Figures 2 through 42-7
Site Coefficient, F _{PGA}	1.00	Table 11.8-1
Site Class Modified MCE _G Peak Ground Acceleration, PGA _M	0.83g	Section 11.8.3 (Eqn 11.8-1)

8.3.3 Conformance to the criteria in Tables 8.3.1 and 8.3.2 for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

8.4 Temporary Excavations

- 8.4.1 The recommendations included herein are provided for temporary excavations. It is the responsibility of the contractor to provide a safe excavation during the construction of the proposed project.
- 8.4.2 Excavations on the order of 5 to 15 feet in vertical height are expected during grading operations and utility installation. The contractor's competent person should evaluate the necessity for lay back of vertical cut areas. Vertical excavations up to 5 feet may be attempted where loose soils or caving sands are not present, and where not surcharged by existing structures or vehicle/construction equipment loads.
- 8.4.3 Vertical excavations greater than 5 feet will require sloping measures in order to provide a stable excavation. We expect that sufficient space is available to complete the majority of the required earthwork for this project using sloping measures. If necessary, compound excavation, slot-cutting, and or shoring recommendations will be provided in an addendum.
- 8.4.4 Where sufficient space is available, temporary unsurcharged embankments may be sloped back at a uniform 1.5:1 (h:v) slope gradient or flatter. A uniform slope does not have a vertical portion.
- 8.4.5 Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The contractor's personnel should inspect the soil exposed in the cut slopes during excavation so that modifications of the slopes can be made if variations in the soil conditions occur. Excavations should be stabilized within 30 days of initial excavation.

8.5 Grading

- 8.5.1 Grading should be performed in accordance with the recommendations provided in this report, the *Recommended Grading Specifications* contained in *Appendix C* and Moreno Valley Standards.
- 8.5.2 Prior to commencing grading, a pre-construction conference should be held at the site with the owner/developer, city inspector, grading contractor, civil engineer, and geotechnical engineer in attendance. Special soil handling requirements can be discussed at that time.

- 8.5.3 Site preparation should begin with the removal of deleterious material, debris, buried trash, and vegetation. The depth of removal should be such that material exposed in cut areas or soil to be used as fill is relatively free of organic matter. Material generated during stripping and/or site demolition should be exported from the site.
- 8.5.4 Undocumented fill and the upper portion of the very old alluvium in the building areas should be removed to expose competent older alluvium. Based on our findings, we expect the existing soils within approximately 5 feet of the existing ground surface will require remedial excavation and proper compaction. Areas of loose, dry, or compressible soils will require additional excavation and processing prior to fill placement. Removals should extend at least 3 feet below the bottom of the planned foundations, and the excavations should be extended laterally a minimum distance of 5 feet beyond the building footprint or for a distance equal to the depth of removal, whichever is greater. Where the lateral over-excavation is not possible, structural setbacks or deepened footings may be required.
- 8.5.5 Removals in pavement and walkway areas should extend at least 2 feet beneath the pavement or flatwork subgrade elevation.
- 8.5.6 The actual depth of removal should be evaluated by the engineering geologist during grading operations. Deeper excavations may be required if dry, loose, soft, or porous materials are present at the base of the removals. The bottom of the excavations should be scarified to a depth of at least 1 foot, moisture conditioned as necessary, and properly compacted.
- 8.5.7 The site should then be brought to final subgrade elevations with fill compacted in layers. In general, soil native to the site is suitable for use as fill if free from vegetation, debris and other deleterious material. Layers of fill should be about 6 to 8 inches in loose thickness and no thicker than will allow for adequate bonding and compaction. Fill, including backfill and scarified ground surfaces, should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content, as determined in accordance with ASTM D 1557. Fill materials placed below optimum moisture content may require additional moisture conditioning prior to placing additional fill. The upper 12 inches of subgrade soil underlying pavement should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content shortly before paving operations.
- 8.5.8 Import fill soil (if necessary) should consist of granular materials with a “very low” expansion potential (EI of less than 20), free of deleterious material and rock fragments larger than 6 inches and should be compacted as recommended herein. Geocon should be notified of the import soil source and should perform laboratory testing of import soil prior to its arrival at the site to determine its suitability as fill material.

- 8.5.9 Foundation excavation bottoms must be observed and approved in writing by the Geotechnical Engineer, prior to placing fill, steel, gravel or concrete.

8.6 Utility Trench Backfill

- 8.6.1 Utility trenches should be properly backfilled in accordance with the requirements of Moreno Valley and the latest edition of the *Standard Specifications for Public Works Construction* (Greenbook). The pipes should be bedded with well graded crushed rock or clean sands (Sand Equivalent greater than 30) to a depth of at least one foot over the pipe. The bedding material must be inspected and approved in writing by the Geotechnical Engineer (a representative of Geocon). The use of well graded crushed rock is only acceptable if used in conjunction with filter fabric to prevent the gravel from having direct contact with soil. The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained. Backfill of utility trenches should not contain rocks greater than 3 inches in diameter. The use of 2-sack slurry and controlled low strength material (CLSM) are also acceptable as backfill. However, consideration should be given to the possibility of differential settlement where the slurry ends and earthen backfill begins. These transitions should be minimized and additional stabilization should be considered at these transitions.
- 8.6.2 Trench excavation bottoms must be observed and approved in writing by the Geotechnical Engineer, prior to placing bedding materials, fill, gravel, or concrete.

8.7 Earthwork Grading Factors

- 8.7.1 Estimates of shrinkage factors are based on empirical judgments comparing the material in its existing or natural state as encountered in the exploratory excavations to a compacted state. Variations in natural soil density and in compacted fill density render shrinkage value estimates very approximate. As an example, the contractor can compact the fill to a dry density of 90 percent or higher of the laboratory maximum dry density. Thus, the contractor has an approximately 10 percent range of control over the fill volume. Based on our experience and the densities measured during our investigation, the shrinkage of undocumented fill and older alluvium soil is expected to be on the order of 0 to 10 percent when compacted to at least 90 percent of the laboratory maximum dry density. This estimate is for preliminary quantity estimates only. Due to the variations in the actual shrinkage/bulking factors, a balance area should be provided to accommodate variations

8.8 Foundation and Concrete Slab-On-Grade Recommendations

- 8.8.1 The foundation recommendations presented herein are for the proposed buildings subsequent to the recommended grading assuming that the buildings are founded in soils with a low expansion potential. If soils with a medium or high expansion potential are placed within 4 feet of finish grade, then Geocon should be contacted for additional recommendations. The proposed structure can be supported on a shallow foundation system bearing in newly placed compacted fill.
- 8.8.2 Foundations for the structure should consist of either continuous strip footings and/or isolated spread footings. Continuous footings should be at least 18 inches wide and extend at least 18 inches below lowest adjacent pad grade. Isolated spread footings should have a minimum width of 24 inches and should also extend at least 18 inches below lowest adjacent pad grade. A wall/column footing dimension detail depicting footing embedment is provided on Figure 3.
- 8.8.3 From a geotechnical engineering standpoint, concrete slabs-on-grade for the structure should be at least 4 inches thick and be reinforced with at least No. 3 steel reinforcing bars placed 24 inches on center in both directions. The concrete slab-on-grade recommendations are based on soil support characteristics only. The project structural engineer should evaluate the structural requirements of the concrete slab for supporting equipment and storage loads. A thicker concrete slab may be required for heavier loading conditions. To reduce the effects of differential settlement on the foundation system, thickened slabs and/or an increase in steel reinforcement can provide a benefit to reduce concrete cracking.
- 8.8.4 Steel reinforcement for continuous footings should consist of at least two No. 4 steel reinforcing bars placed horizontally in the footings, one near the top and one near the bottom. Steel reinforcement for the spread footings should be designed by the project structural engineer.
- 8.8.5 The recommendations presented herein are based on soil characteristics only (EI of 20 or less) and are not intended to replace steel reinforcement required for structural considerations.
- 8.8.6 Foundations may be designed for an allowable soil bearing pressure of 3,500 pounds per square foot (psf) (dead plus live load). The value presented herein is for dead plus live loads and may be increased by one-third when considering transient loads due to wind or seismic forces.

- 8.8.7 The maximum expected static settlement for the planned structures supported on conventional foundation systems with the above allowable bearing pressure and deriving support in engineered fill is estimated to be 1 inch and to occur below the heaviest loaded structural element. Differential settlement is estimated to be on the order of ½ inch over a horizontal distance of 40 feet. Once the design and foundation loading configuration proceeds to a more finalized plan, the estimated settlements within this report should be reviewed and revised, if necessary
- 8.8.8 Once the design and foundation loading configuration proceeds to a more finalized plan, the estimated settlements within this report should be reviewed and revised, if necessary.
- 8.8.9 Slabs-on-grade that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder placed directly beneath the slab. The vapor retarder and acceptable permeance should be specified by the project architect or developer based on the type of floor covering that will be installed. The vapor retarder design should be consistent with the guidelines presented in Section 9.3 of the American Concrete Institute's (ACI) Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials (ACI 302.2R-06) and should be installed in general conformance with ASTM E1643 (latest edition) and the manufacturer's recommendations. A minimum thickness of 15 mils extruded polyolefin plastic is recommended; vapor retarders which contain recycled content or woven materials are not recommended. The vapor retarder should have a permeance of less than 0.01 perms demonstrated by testing before and after mandatory conditioning. The vapor retarder should be installed in direct contact with the concrete slab with proper perimeter seal. If the California Green Building Code requirements apply to this project, the vapor retarder should be underlain by 4 inches of clean aggregate. It is important that the vapor retarder be puncture resistant since it will be in direct contact with angular gravel. As an alternative to the clean aggregate suggested in the Green Building Code, the concrete slab-on-grade may be underlain by a vapor retarder over 4 inches of clean sand (sand equivalent greater than 30), since the sand will serve as a capillary break and will minimize the potential for punctures and damage to the vapor barrier.
- 8.8.10 The bedding sand thickness should be evaluated by the project foundation engineer, architect, and/or developer. However, we should be contacted to provide recommendations if the bedding sand is thicker than 4 inches. Placement of 3 inches and 4 inches of sand is common practice in southern California for 5-inch and 4-inch thick slabs, respectively. The foundation engineer should provide appropriate concrete mix design criteria and curing measures that may be utilized to assure proper curing of the slab to reduce the potential for rapid moisture loss and subsequent cracking and/or slab curl.

- 8.8.11 Special subgrade presaturation is not deemed necessary prior to placing concrete; however, the exposed foundation and slab subgrade soil should be moisturized to maintain a moist condition as would be expected in any such concrete placement.
- 8.8.12 The recommendations of this report are intended to reduce the potential for cracking of slabs due to expansive soil (if present), differential settlement of existing soil, or soil with varying thicknesses. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade placed on such conditions may still exhibit some cracking due to soil movement and/or shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.
- 8.8.13 Geocon should be consulted to provide additional design parameters as required by the structural engineer.

8.9 Concrete Flatwork

- 8.9.1 Exterior concrete flatwork not subject to vehicular traffic should be constructed in accordance with the recommendations herein. Slab panels should be a minimum of 4 inches thick and, when in excess of 8 feet square, should be reinforced with No. 3 reinforcing bars spaced 24 inches on center in each direction to reduce the potential for wide cracking. In addition, concrete flatwork should be provided with crack control joints to reduce and/or control shrinkage cracking. Crack control spacing should be determined by the project structural engineer based upon the slab thickness and intended usage. Criteria of the American Concrete Institute (ACI) should be taken into consideration when establishing crack control spacing. Subgrade soil for exterior slabs not subjected to vehicle loads should be compacted in accordance with criteria presented in the grading section prior to concrete placement. Subgrade soil should be properly compacted and the moisture content of subgrade soil should be checked prior to placing concrete.
- 8.9.2 Even with the incorporation of the recommendations within this report, the exterior concrete flatwork has a likelihood of experiencing some movement due to swelling or settlement; therefore, the steel reinforcement should overlap continuously in flatwork to reduce the potential for vertical offsets within flatwork. Additionally, flatwork should be structurally connected to the curbs, where possible, to reduce the potential for offsets between the curbs and the flatwork.

- 8.9.3 Where exterior flatwork abuts structures at entrant or exit points, the exterior slab should be dowelled into the structure's foundation stemwall. This recommendation is intended to reduce the potential for differential elevations that could result from differential settlement or minor heave of the flatwork. Dowelling details should be designed by the project structural engineer.
- 8.9.4 The recommendations presented herein are intended to reduce the potential for cracking as a result of differential movement. However, even with the incorporation of the recommendations presented herein, concrete will still crack. The occurrence of concrete shrinkage cracks is independent of the soil supporting characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, the use of crack control joints and proper concrete placement and curing. Crack control joints should be spaced at intervals no greater than 12 feet. Literature provided by the Portland Concrete Association (PCA) and American Concrete Institute (ACI) present recommendations for proper concrete mix, construction, and curing practices, and should be incorporated into project construction.

8.10 Conventional Retaining Walls

- 8.10.1 The recommendations presented herein are generally applicable to the design of rigid concrete or masonry retaining walls having a maximum height of 10 feet. In the event that walls higher than 10 feet or other types of walls are planned, Geocon should be consulted for additional recommendations.
- 8.10.2 Retaining walls not restrained at the top and having a level backfill surface should be designed for an active soil pressure equivalent to the pressure exerted by a fluid density of 35 pounds per cubic foot (pcf). Where the backfill will be inclined at no steeper than 2:1 (horizontal to vertical), an active soil pressure of 60 pcf is recommended. These soil pressures assume that the backfill materials within an area bounded by the wall and a 1:1 plane extending upward from the base of the wall possess an EI of 50 or less. For walls where backfill materials do not conform to the criteria herein, Geocon should be consulted for additional recommendations.
- 8.10.3 Unrestrained walls are those that are allowed to rotate more than $0.001H$ (where H equals the height of the retaining portion of the wall in feet) at the top of the wall. Where walls are restrained from movement at the top, walls with a level backfill surface should be designed for a soil pressure equivalent to the pressure exerted by a fluid density of 55 pcf.

- 8.10.4 The structural engineer should determine the seismic design category for the project in accordance with Section 1613 of the CBC. If the project possesses a seismic design category of D, E, or F, proposed retaining walls in excess of 6 feet in height should be designed with seismic lateral pressure (Section 1803.5.12 of the 2016 CBC).
- 8.10.5 A seismic load of 10 pcf should be used for design of walls that support more than 6 feet of backfill in accordance with Section 1803.5.12 of the 2016 CBC. The seismic load is applied as an equivalent fluid pressure along the height of the wall and the calculated loads result in a maximum load exerted at the base of the wall and zero at the top of the wall. This seismic load should be applied in addition to the active earth pressure. The earth pressure is based on half of two-thirds of PGA_M calculated from ASCE 7-10 Section 11.8.3.
- 8.10.6 Unrestrained walls will move laterally when backfilled and loading is applied. The amount of lateral deflection is dependent on the wall height, the type of soil used for backfill, and loads acting on the wall. The retaining walls and improvements above the retaining walls should be designed to incorporate an appropriate amount of lateral deflection as determined by the structural engineer.
- 8.10.7 Retaining walls should be provided with a drainage system adequate to prevent the buildup of hydrostatic forces and waterproofed as required by the project architect. The soil immediately adjacent to the backfilled retaining wall should be composed of free draining material completely wrapped in Mirafi 140N (or equivalent) filter fabric for a lateral distance of 1 foot for the bottom two-thirds of the height of the retaining wall. The upper one-third should be backfilled with less permeable compacted fill to reduce water infiltration. Alternatively, a drainage panel, such as a Miradrain 6000 or equivalent, can be placed along the back of the wall. A typical drain detail for each option is shown on Figure 4. The use of drainage openings through the base of the wall (weep holes) is not recommended where the seepage could be a nuisance or otherwise adversely affect the property adjacent to the base of the wall. The recommendations herein assume a properly compacted backfill (EI of 50 or less) with no hydrostatic forces or imposed surcharge load. If conditions different than those described are expected or if specific drainage details are desired, Geocon should be contacted for additional recommendations.
- 8.10.8 Wall foundations should be designed in accordance with the above foundation recommendations.

8.11 Lateral Loading

- 8.11.1 To resist lateral loads, a passive pressure exerted by an equivalent fluid density of 350 pounds per cubic foot (pcf) should be used for the design of footings or shear keys. The allowable passive pressure assumes a horizontal surface extending at least 5 feet, or three times the surface generating the passive pressure, whichever is greater. The upper 12 inches of material in areas not protected by floor slabs or pavement should not be included in design for passive resistance.
- 8.11.2 If friction is to be used to resist lateral loads, an allowable coefficient of friction between soil and concrete of 0.40 should be used for design. The friction coefficient may be reduced depending on the vapor barrier or waterproofing material used for construction in accordance with the manufacturer's recommendations.
- 8.11.3 The passive and frictional resistant loads can be combined for design purposes. The lateral passive pressures may be increased by one-third when considering transient loads due to wind or seismic forces.

8.12 Preliminary Pavement Recommendations

- 8.12.1 We calculated the flexible pavement sections in general conformance with the *Caltrans Method of Flexible Pavement Design* (Highway Design Manual, Section 608.4) and Moreno Valley specifications using a range of Traffic Indices. The project civil engineer and owner should evaluate the final Traffic Index for the pavements and review the pavement designations to determine appropriate locations for pavement thickness. Based on our laboratory testing we have used a preliminary R-value of 30 for the subgrade soils for the purposes of this analysis. The final pavement sections should be based on the R-value of the subgrade soil encountered at final subgrade elevation. Table 8.12.1 presents the preliminary flexible pavement sections.

**TABLE 8.12.1
PRELIMINARY FLEXIBLE PAVEMENT SECTION**

Location	Assumed Traffic Index	Subgrade R-Value	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
Driveways for automobiles and light-duty vehicles	5.5	30	3.0	7.0
Medium truck traffic areas	6.0	30	3.5	8.0
Driveways for heavy truck and fire truck traffic	7.0	30	4.0	10.0
Collector Roadways	8.0	30	5.0	11.0

- 8.12.2 Prior to placing base materials, the upper 12 inches of the subgrade soil should be scarified, moisture conditioned as necessary, and recompact to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content as determined by ASTM D 1557. Similarly, the base material should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content. Asphalt concrete should be compacted to a density of at least 95 percent of the laboratory Hveem density in accordance with ASTM D 2726.
- 8.12.3 Base materials should conform to Section 26 of the *Standard Specifications for The State of California Department of Transportation (Caltrans)*. The asphalt concrete should conform to Section 203-6 of the *Standard Specifications for Public Works Construction (Greenbook)*.
- 8.12.4 A rigid Portland cement concrete (PCC) pavement section should be placed in heavy truck areas, driveway aprons, and cross gutters. We calculated the rigid pavement section in general conformance with the procedure recommended by the American Concrete Institute report ACI 330R *Guide for Design and Construction of Concrete Parking Lots* using the parameters presented in Table 8.12.4.

**TABLE 8.12.4
RIGID PAVEMENT DESIGN PARAMETERS**

Design Parameter	Design Value
Modulus of subgrade reaction, k	150 pci
Modulus of rupture for concrete, M_R	500 psi
Traffic Category, TC	C and D
Average daily truck traffic, ADTT	100 and 700

- 8.12.5 Based on the criteria presented herein, the PCC pavement sections should have a minimum thickness as presented in Table 8.12.5.

**TABLE 8.12.5
RIGID PAVEMENT RECOMMENDATIONS**

Location	Portland Cement Concrete (inches)
Automobile Parking Stalls (TC=C)	6.5
Heavy Truck and Fire Lane Areas (TC=D)	7.5

- 8.12.6 The PCC pavement should be placed over subgrade soil that is compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content. This pavement section is based on a minimum concrete compressive strength of approximately 3,000 psi (pounds per square inch).
- 8.12.7 A thickened edge or integral curb should be constructed on the outside of concrete slabs subjected to wheel loads. The thickened edge should be 1.2 times the slab thickness or a minimum thickness of 2 inches, whichever results in a thicker edge, and taper back to the recommended slab thickness 4 feet behind the face of the slab (e.g., 6-inch and 7.5-inch-thick slabs would have an 8- and 9.5-inch-thick edge, respectively). Reinforcing steel will not be necessary within the concrete for geotechnical purposes with the possible exception of dowels at construction joints as discussed herein.
- 8.12.8 In order to control the location and spread of concrete shrinkage cracks, crack-control joints (weakened plane joints) should be included in the design of the concrete pavement slab in accordance with the referenced ACI report.
- 8.12.9 The performance of pavements is highly dependent on providing positive surface drainage away from the edge of the pavement. Ponding of water on or adjacent to the pavement surfaces will likely result in pavement distress and subgrade failure. Drainage from landscaped areas should be directed to controlled drainage structures. Landscape areas adjacent to the edge of asphalt pavements are not recommended due to the potential for surface or irrigation water to infiltrate the underlying permeable aggregate base and cause distress. Where such a condition cannot be avoided, consideration should be given to incorporating measures that will significantly reduce the potential for subsurface water migration into the aggregate base. If planter islands are planned, the perimeter curb should extend at least 6 inches below the level of the base materials.

8.13 Temporary Excavations

- 8.13.1 Excavations on the order of 5 to 15 feet below the existing ground surface are expected for construction of the proposed utility improvements; and we expect that the proposed utilities will be installed with conventional cut-and-cover methods.
- 8.13.2 The excavations will expose fill and very old alluvial soils which are suitable for vertical excavations up to 5 feet where loose soils or caving sands are not present and where not surcharged by adjacent traffic or structures.

- 8.13.3 Vertical excavations greater than 5 feet will require sloping measures in order to provide a stable excavation. Where sufficient space is available, temporary unsurcharged embankments should be designed by the contractor's competent person in accordance with OSHA regulations.
- 8.13.4 Where there is insufficient space for sloped excavations, shoring or trench shields should be used to support excavations. Shoring may also be necessary where sloped excavation could remove vertical or lateral support of existing improvements, including existing utilities and adjacent structures. Recommendations for temporary shoring can be provided in an addendum if needed.
- 8.13.5 Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The contractor's competent person should inspect the soils exposed in the cut slopes during excavation in accordance with OSHA regulations so that modifications of the slopes can be made if variations in the soil conditions occur.

8.14 Site Drainage and Moisture Protection

- 8.14.1 Adequate site drainage is critical to reduce the potential for differential soil movement, erosion and subsurface seepage. Under no circumstances should water be allowed to pond adjacent to footings. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2016 CBC 1804.4 or other applicable standards. In addition, surface drainage should be directed away from the top of slopes into swales or other controlled drainage devices. Roof and pavement drainage should be directed into conduits that carry runoff away from the proposed structure.
- 8.14.2 Landscape planters that saturate the subsurface should not be used within 20 feet of the proposed structure or other settlement sensitive on grade improvements. Localized surface settlement should be anticipated in areas where water is allowed to infiltrate into the subsurface.
- 8.14.3 Underground utilities should be leak free. Utility and irrigation lines should be checked periodically for leaks, and detected leaks should be repaired promptly. Detrimental soil movement could occur if water is allowed to infiltrate the soil for prolonged periods of time.

- 8.14.4 Landscaping planters adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Area drains to collect excess irrigation water and transmit it to drainage structures or impervious above-grade planter boxes can be used. In addition, where landscaping is planned adjacent to the pavement, construction of a cutoff wall along the edge of the pavement that extends at least 6 inches below the bottom of the base material should be considered.
- 8.14.5 If not properly constructed, there is a potential for distress to improvements and properties located hydrologically down gradient or adjacent to infiltration areas. Factors such as the amount of water to be detained, its residence time, and soil permeability have an important effect on seepage transmission and the potential adverse impacts that may occur if the storm water management features are not properly designed and constructed. We have not performed a hydrogeology study at the site. Down-gradient and adjacent structures may be subjected to seeps, movement of foundations and slabs, or other impacts as a result of water infiltration.

8.15 Grading and Foundation Plan Review

- 8.15.1 Geocon should review the project grading and foundation plans prior to final design submittal to verify that the plans have been prepared in substantial conformance with the recommendations of this report and to provide additional analyses or recommendations, if necessary.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.
2. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon.
3. This report is issued with the understanding that it is the responsibility of the owner or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.
4. The findings of this report are valid as of the date of this report. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

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APPENDIX A

FIELD INVESTIGATION

Field work for our investigation included a subsurface exploration, soil sampling, and percolation testing. The *Geologic Map*, Figure 2 presents the locations of the exploratory borings. Boring logs and an explanation of the geologic units encountered are presented in figures following the text in this appendix. We located the borings in the field using existing reference points. Therefore, actual boring locations may deviate slightly. We performed a field investigation on December 17, 2018 which consisted of drilling 10 exploratory borings to a maximum depth of approximately 51½ feet below existing grade with a CME 75 drill rig equipped with 8-inch-diameter hollow-stem auger.

We collected bulk and relatively undisturbed samples from the borings by driving a 3-inch O. D., California Modified Sampler into the “undisturbed” soil mass with blows from a 140-pound hammer falling 30 inches on an auto hammer. The California Modified Sampler was equipped with 1-inch high by 2³/₈-inch inside diameter brass sampler rings to facilitate removal and testing. Relatively undisturbed samples and bulk samples of disturbed soils were transported to our laboratory for testing. The type of sample is noted on the exploratory boring logs.

The samplers were driven 18 inches into the bottom of the excavations. Blow counts are recorded for every 6 inches the sampler is driven. The penetration resistances shown on the boring logs are shown in terms of blows per foot. The values indicated on the boring logs are the sum of the last 12 inches of the sampler if driven 18 inches. If the sampler was not driven for 18 inches, an approximate value is calculated in term of blows per foot or the final 6-inch interval is reported. These values are not to be taken as N-values, adjustments have not been applied. We estimated elevations shown on the boring logs from a topographic map.

We visually examined the soil conditions encountered within the borings, classified, and logged in general accordance with the Unified Soil Classification System (USCS). Logs of the borings are presented on Figures A-1 through A-10. The logs depict the general soil and geologic conditions encountered and the depth at which we obtained the samples.

Percolation testing was performed on December 18, 2018 in accordance with *Riverside County Flood Control and Water Conservation District, LID BMP Manual, Appendix A*. The percolation tests were run in accordance with *Section 2.3., Shallow Percolation Test*. The percolation test data is presented on Figures A-11 and A-14.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING B-1		PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) <u>1756</u>	DATE COMPLETED <u>12/17/2018</u>			
					EQUIPMENT <u>HOLLOW STEM AUGER</u> BY: <u>PDT</u>				
MATERIAL DESCRIPTION									
0	B-1@0-5'			SM	UNDOCUMENTED FILL (afu) Silty SAND, loose, dry, reddish brown; fine to medium sand; some gravel and cobble; some concrete chunks				
2	B-1@2.5'			SM	VERY OLD ALLUVIAL FAN DEPOSITS (Qvof) Silty SAND, very dense, damp, light brown; fine to coarse sand	85	124.6	4.6	
4	B-1@5'				-Becomes dark reddish brown; damp; trace coarse sand; trace gravel; trace carbonate stringers	80	130.4	5.3	
6	B-1@7.5				-Becomes dense, moist; fine sand; some mica	56	125.4	7.8	
8	B-1@10'				-Some medium sand	69	132.9	7.9	
10				ML	Sandy SILT, hard, moist, dark gray; fine sand; trace medium sand				
12					-Becomes dark brown; some clay				
14	B-1@15'			SM	Silty SAND, dense, moist, reddish brown; fine to medium sand; trace mica	60			
16									
18									
20	B-1@20'				-Becomes very dense	80	126.0	10.8	
22									
24									
26	B-1@25'				-Becomes medium dense	44			
28									

Figure A-1,
Log of Boring B-1, Page 1 of 2

T2843-22-01 BORING LOGS.GPJ

SAMPLE SYMBOLS		... SAMPLING UNSUCCESSFUL		... STANDARD PENETRATION TEST		... DRIVE SAMPLE (UNDISTURBED)
		... DISTURBED OR BAG SAMPLE		... CHUNK SAMPLE		... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING B-1 ELEV. (MSL.) <u>1756</u> DATE COMPLETED <u>12/17/2018</u> EQUIPMENT <u>HOLLOW STEM AUGER</u> BY: <u>PDT</u>	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	
MATERIAL DESCRIPTION									
30	B-1@30'			SM	Silty SAND, medium dense, moist, reddish brown; trace coarse sand; trace gravel; increase in silt	12			
32									
34									
36	B-1@35'					-Becomes brownish red; fine sand; trace medium sand	44		
38									
40	B-1@40'				-Some carbonate stringers	23			
42									
44									
46	B-1@45'				-Becomes dense; strong brown; fine to medium sand; carbonate stringers; micaceous	62			
48									
50	B-1@50'					34			
					Total depth 51.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 4/9/2018				

Figure A-1,
Log of Boring B-1, Page 2 of 2

T2843-22-01 BORING LOGS.GPJ

SAMPLE SYMBOLS	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING B-2		PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) <u>1753</u>	DATE COMPLETED <u>12/17/2018</u>			
					EQUIPMENT <u>HOLLOW STEM AUGER</u> BY: <u>PDT</u>				
MATERIAL DESCRIPTION									
0				SM	UNDOCUMENTED FILL (afu) Silty SAND, medium dense, dry, reddish brown; fine to medium sand				
2	B-2@2.5'					50/6"	117.3	6.2	
4	B-2@5-10'			ML	VERY OLD ALLUVIAL FAN DEPOSITS (Qvof) Sandy SILT, stiff, damp, light brown; fine sand	33	96.7	9.6	
6	B-2@5'								
8	B-2@7.5'				-Becomes moist moist, dark brown; micaceous	21	106.1	11.5	
10	B-2@10'					24	102.9	10.3	
12									
14				SM	Silty SAND, medium dense, moist, strong brown; fine sand	40			
16	B-2@15'								
18									
20	B-2@20'					42	128.0	4.5	
22									
24									
26	B-2@25'				-Becomes dense	63			
					Total depth 26.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 4/9/2018				

Figure A-2,
Log of Boring B-2, Page 1 of 1

T2843-22-01 BORING LOGS.GPJ







SAMPLE SYMBOLS	<input type="checkbox"/> ... SAMPLING UNSUCCESSFUL	<input type="checkbox"/> ... STANDARD PENETRATION TEST	<input type="checkbox"/> ... DRIVE SAMPLE (UNDISTURBED)
	<input checked="" type="checkbox"/> ... DISTURBED OR BAG SAMPLE	<input checked="" type="checkbox"/> ... CHUNK SAMPLE	<input checked="" type="checkbox"/> ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING B-3			PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) <u>1751</u>	DATE COMPLETED <u>12/17/2018</u>	EQUIPMENT <u>HOLLOW STEM AUGER</u> BY: <u>PDT</u>			
MATERIAL DESCRIPTION										
0				SM	UNDOCUMENTED FILL (afu)					
2				SM	Silty SAND, loose, dry, reddish brown; fine to medium sand; some gravel and cobble					
4	B-3@2.5'				VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)					
6	B-3@5-10'				Silty SAND, very dense, damp, brownish red; fine to medium sand; carbonate stringers		50/6"			
8	B-3@5'				-Becomes moist; strong brown		50/6"	127.9	7.5	
10	B-3@7.5'			ML	-Trace carbonate stringers; micaceous		50/6"			
12	B-3@10'				Sandy SILT, hard, moist, dark brown; fine sand					
14				CL	Sandy CLAY, stiff, moist, dark brown; fine sand					
16	B-3@15'						44			
18				SC	Clayey SAND, medium dense, moist, reddish brown, fine to coarse sand; trace carbonate stringers					
20	B-3@20'						44			
					Total depth 21.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018					

Figure A-3,
Log of Boring B-3, Page 1 of 1

T2843-22-01 BORING LOGS.GPJ







SAMPLE SYMBOLS		
	... SAMPLING UNSUCCESSFUL	
	... DISTURBED OR BAG SAMPLE	
		
		
		... DRIVE SAMPLE (UNDISTURBED)
		... CHUNK SAMPLE
		... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING B-4		PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) <u>1756</u>	DATE COMPLETED <u>12/17/2018</u>			
					EQUIPMENT <u>HOLLOW STEM AUGER</u> BY: <u>ATS</u>				
MATERIAL DESCRIPTION									
0				SM	UNDOCUMENTED FILL (afu) Silty SAND, dense, damp, brown; fine sand; some coarse sand; trace gravel				
2	B-4@2.5'			SM	VERY OLD ALLUVIAL FAN DEPOSITS (Qvof) Silty SAND, very dense, damp, light brown; fine sand; some medium and coarse sand; trace mica; root hairs -Becomes dense, strong brown; trace pinhole porosity; micaceous -Becomes very dense; moist -Becomes dense; dark gray; fine sand -Becomes very dense; brownish gray; some medium and coarse sand	50/5"	130.9	7.0	
4	B-4@2.5-7'								
6	B-4@5'								
8	B-4@7.5'								
10	B-4@10'								
12									
14									
16	B-4@15'					50/5"			
18									
20	B-4@20'			SC	Clayaey SAND, medium dense, damp, reddish brown; fine sand; some coarse sand	42	135.2	6.1	
					Total depth 21.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018				

Figure A-4,
Log of Boring B-4, Page 1 of 1

T2843-22-01 BORING LOGS.GPJ

SAMPLE SYMBOLS	 ... SAMPLING UNSUCCESSFUL	 ... STANDARD PENETRATION TEST	 ... DRIVE SAMPLE (UNDISTURBED)
	 ... DISTURBED OR BAG SAMPLE	 ... CHUNK SAMPLE	 ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING B-5 ELEV. (MSL.) <u>1755</u> DATE COMPLETED <u>12/17/2018</u> EQUIPMENT <u>HOLLOW STEM AUGER</u> BY: <u>ATS</u>	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
MATERIAL DESCRIPTION								
0	B-5@0-5'			SM	UNDOCUMENTED FILL (afu) Silty SAND, dense, damp, brown; fine sand; some coarse sand; trace gravel			
2	B-5@2.5'			SM	VERY OLD ALLUVIAL FAN DEPOSITS (Qvof) Silty SAND, very dense, moist, light brown; fine sand; some medium and coarse sand; trace mica; root hairs	66	116.6	6.5
4	B-5@5'				-Becomes very dense, moist, strong brown; pinhole porosity; micaceous	50/4"	134.1	7.6
6	B-5@7.5'			SC	Clayey SAND, very dense, moist, dark brown; fine sand; trace medium and coarse sand; trace gravel; pinhole porosity; trace mica	50/6"	130.7	7.8
8	B-5@10'				-Becomes dense; reddish brown	50		
10	B-5@15'				-Becomes brown	57	132.4	6.1
12	B-5@20'			SM	Silty SAND, medium dense, moist, light brown; fine sand; some medium and coarse sand; pinhole porosity	32		
14					Total depth 21.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018			

Figure A-5,
Log of Boring B-5, Page 1 of 1

T2843-22-01 BORING LOGS.GPJ

SAMPLE SYMBOLS	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING B-6			PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) <u>1752</u>	DATE COMPLETED <u>12/17/2018</u>	EQUIPMENT <u>HOLLOW STEM AUGER</u> BY: <u>ATS</u>			
MATERIAL DESCRIPTION										
0	B-6@0-5'			SM	UNDOCUMENTED FILL (afu) Silty SAND, dense, damp, brown; fine sand; trace gravel; root hairs					
2	B-6@2.5'			SP	Poorly Graded SAND, very dense, moist, light yellowish brown; fine sand; some medium and coarse sand; trace mica	50/5"	129.6	6.0		
4	B-6@5'			SC	Clayey SAND, very dense, moist, light reddish brown; fine sand; pinhole porosity	50/6"				
6	B-6@7.5'			SM	Silty SAND, very dense, moist, grayish brown; fine sand; pinhole porosity	50/6"	131.5	6.0		
8	B-6@10'			SM	Silty SAND, very dense, moist, grayish brown; fine sand; pinhole porosity	50/6"				
10	B-6@10'			SM	Silty SAND, very dense, moist, grayish brown; fine sand; pinhole porosity	50/6"				
12	B-6@10'			SM	Silty SAND, very dense, moist, grayish brown; fine sand; pinhole porosity	50/6"				
14	B-6@15'			SC	Clayey SAND, dense, moist, gray, fine sand	72				
16	B-6@15'			SC	Clayey SAND, dense, moist, gray, fine sand	72				
					Total depth 16.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018					

Figure A-6,
Log of Boring B-6, Page 1 of 1

T2843-22-01 BORING LOGS.GPJ

SAMPLE SYMBOLS	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING P-1		PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) <u>1751</u>	DATE COMPLETED <u>12/17/2018</u>			
					EQUIPMENT <u>HOLLOW STEM AUGER</u>		BY: <u>ATS</u>		
MATERIAL DESCRIPTION									
0				SM	UNDOCUMENTED FILL (afu) Silty SAND, medium dense, dry, medium brown; fine sand; some medium and coarse sand				
2				SM	VERY OLD ALLUVIAL FAN DEPOSITS (Qvof) Silty SAND, dense, damp, brown; fine to medium sand; some coarse sand; trace gravel				
4									
6									
8	P-1@7-8								
					Total depth 8 feet Groundwater not encountered Set as Percolation Test P-1 Backfilled with cuttings 12/18/2018				

Figure A-7,
Log of Boring P-1, Page 1 of 1

T2843-22-01 BORING LOGS.GPJ

SAMPLE SYMBOLS	<input type="checkbox"/>	... SAMPLING UNSUCCESSFUL	<input type="checkbox"/>	... STANDARD PENETRATION TEST	<input type="checkbox"/>	... DRIVE SAMPLE (UNDISTURBED)
	<input checked="" type="checkbox"/>	... DISTURBED OR BAG SAMPLE	<input checked="" type="checkbox"/>	... CHUNK SAMPLE	<input type="checkbox"/>	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING P-2		PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) <u>1751</u>	DATE COMPLETED <u>12/17/2018</u>			
					EQUIPMENT <u>HOLLOW STEM AUGER</u>		BY: <u>ATS</u>		
MATERIAL DESCRIPTION									
0				SM	UNDOCUMENTED FILL (afu) Silty SAND, medium dense, dry, medium brown; fine sand; some medium and coarse sand				
2				SM	VERY OLD ALLUVIAL FAN DEPOSITS (Qvof) Silty SAND, dense, damp, brown; fine to medium sand; some coarse sand; trace gravel				
4									
6	P-2@6-7"								
					Total depth 7 feet Groundwater not encountered Set as Percolation Test P-2 Backfilled with cuttings 12/18/2018				

Figure A-8,
Log of Boring P-2, Page 1 of 1

T2843-22-01 BORING LOGS.GPJ

SAMPLE SYMBOLS	<input type="checkbox"/> ... SAMPLING UNSUCCESSFUL	<input type="checkbox"/> ... STANDARD PENETRATION TEST	<input type="checkbox"/> ... DRIVE SAMPLE (UNDISTURBED)
	<input checked="" type="checkbox"/> ... DISTURBED OR BAG SAMPLE	<input checked="" type="checkbox"/> ... CHUNK SAMPLE	<input checked="" type="checkbox"/> ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.



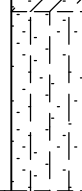









DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING P-3		PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) <u>1751</u>	DATE COMPLETED <u>12/17/2018</u>			
					EQUIPMENT <u>HOLLOW STEM AUGER</u>		BY: <u>ATS</u>		
MATERIAL DESCRIPTION									
0				SC	UNDOCUMENTED FILL (afu) Clayey SAND, medium dense, damp, medium brown; fine sand; some coarse sand				
2				SC	VERY OLD ALLUVIAL FAN DEPOSITS (Qvof) Clayey SAND, dense, damp, light olive brown; fine sand; some coarse sand				
4				SM	Silty SAND, dense, damp, medium brown; fine sand				
6				SM	Silty SAND, dense, damp, medium brown; fine sand				
8				SM	Silty SAND, dense, damp, medium brown; fine sand				
10	P-3@9-10			ML	Sandy SILT, stiff, moist, dark yellowish brown; fine to medium sand; trace coarse sand				
					Total depth 10 feet Groundwater not encountered Set as Percolation Test P-3 Backfilled with cuttings 12/18/2018				

Figure A-9,
Log of Boring P-3, Page 1 of 1

T2843-22-01 BORING LOGS.GPJ

SAMPLE SYMBOLS	 ... SAMPLING UNSUCCESSFUL	 ... STANDARD PENETRATION TEST	 ... DRIVE SAMPLE (UNDISTURBED)
	 ... DISTURBED OR BAG SAMPLE	 ... CHUNK SAMPLE	 ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.



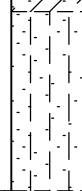
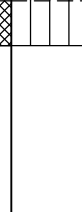
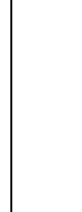
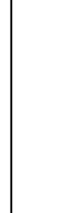





DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING P-4		PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					ELEV. (MSL.) <u>1752</u>	DATE COMPLETED <u>12/17/2018</u>			
					EQUIPMENT <u>HOLLOW STEM AUGER</u>		BY: <u>ATS</u>		
MATERIAL DESCRIPTION									
0				SC	UNDOCUMENTED FILL (afu) Clayey SAND, medium dense, damp, medium brown; fine sand; some coarse sand				
2				SC	VERY OLD ALLUVIAL FAN DEPOSITS (Qvof) Clayey SAND, dense, damp, light olive brown; fine sand; some coarse sand				
4				SM	Silty SAND, dense, damp, medium brown; fine sand				
6				SM	Silty SAND, dense, damp, medium brown; fine sand				
8				SM	Silty SAND, dense, damp, medium brown; fine sand				
10	P-4@9-10			ML	Sandy SILT, stiff, moist, dark yellowish brown; fine to medium sand; trace coarse sand				
					Total depth 10 feet Groundwater not encountered Set as Percolation Test P-4 Backfilled with cuttings 11/27/2018				

Figure A-10,
Log of Boring P-4, Page 1 of 1

T2843-22-01 BORING LOGS.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL		... STANDARD PENETRATION TEST
	... DISTURBED OR BAG SAMPLE		... CHUNK SAMPLE
			... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PERCOLATION TEST REPORT							
Project Name:		KIA Moreno Valley			Project No.:		T2844-22-01
Test Hole No.:		P-1			Date Excavated:		12/17/2018
Length of Test Pipe:		108.0 inches			Soil Classification:		SM
Height of Pipe above Ground:		16.8 inches			Presoak Date:		12/17/2018
Depth of Test Hole:		91.2 inches			Perc Test Date:		12/18/2018
Check for Sandy Soil Criteria Tested by:		SP			Percolation Tested by:		SP
Water level measured from bottom of hole							
Sandy Soil Criteria Test							
Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	8:52 AM	25	25	43.2	43.1	0.1	208
	9:17 AM						
2	9:17 AM	25	50	43.1	43.0	0.1	208
	9:42 AM						
Soil Criteria: Normal							
Percolation Test							
Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:42 AM	30	30	43.1	43.0	0.1	250
	10:12 AM						
2	10:12 AM	30	60	43.0	42.8	0.1	250
	10:42 AM						
3	10:42 AM	30	90	42.8	42.6	0.2	125
	11:12 AM						
4	11:12 AM	30	120	42.6	42.5	0.1	250
	11:42 AM						
5	11:42 AM	30	150	42.5	42.4	0.1	250
	12:12 PM						
6	12:12 PM	30	180	42.4	42.2	0.1	250
	12:42 PM						
7	12:42 PM	30	210	42.2	42.1	0.1	250
	1:12 PM						
8	1:12 PM	30	240	42.1	42.0	0.1	250
	1:42 PM						
9	1:42 PM	30	270	42.0	41.9	0.1	250
	2:12 PM						
10	2:12 PM	30	300	41.9	41.8	0.1	250
	2:42 PM						
11	2:42 PM	30	330	41.8	41.6	0.1	250
	3:12 PM						
12	3:12 PM	30	360	41.6	41.5	0.1	250
	3:42 PM						
Infiltration Rate (in/hr):		0.01					
Radius of test hole (in):		4			Figure A-11		
Average Head (in):		41.6					

PERCOLATION TEST REPORT								
Project Name:		KIA Moreno Valley			Project No.:		T2844-22-01	
Test Hole No.:		P-2			Date Excavated:		12/17/2018	
Length of Test Pipe:		95.8 inches			Soil Classification:		SM	
Height of Pipe above Ground:		16.8 inches			Presoak Date:		12/17/2018	
Depth of Test Hole:		79.0 inches			Perc Test Date:		12/18/2018	
Check for Sandy Soil Criteria Tested by:				SP		Percolation Tested by:		SP
Water level measured from bottom of hole								
Sandy Soil Criteria Test								
Trial No.	Time	Time Interval	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)	
1	8:56 AM	25	25	23.4	23.0	0.4	69	
	9:21 AM							
2	9:21 AM	25	50	23.0	22.9	0.1	208	
	9:46 AM							
Soil Criteria: Normal								
Percolation Test								
Reading No.	Time	Time Interval	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)	
1	9:46 AM	30	30	22.9	22.6	0.4	83	
	10:16 AM							
2	10:16 AM	30	60	22.6	22.2	0.4	83	
	10:46 AM							
3	10:46 AM	30	90	22.2	21.4	0.8	36	
	11:16 AM							
4	11:16 AM	30	120	21.4	20.2	1.2	25	
	11:46 AM							
5	11:46 AM	30	150	20.2	19.1	1.1	28	
	12:16 PM							
6	12:16 PM	30	180	19.1	18.0	1.1	28	
	12:46 PM							
7	12:46 PM	30	210	18.0	16.8	1.2	25	
	1:16 PM							
8	1:16 PM	30	240	16.8	15.7	1.1	28	
	1:46 PM							
9	1:46 PM	30	270	15.7	14.6	1.1	28	
	2:16 PM							
10	2:16 PM	30	300	14.6	13.6	1.1	28	
	2:46 PM							
11	2:46 PM	30	330	13.6	12.5	1.1	28	
	3:16 PM							
12	3:16 PM	30	360	12.5	11.4	1.1	28	
	3:46 PM							
Infiltration Rate (in/hr):			0.31					
Radius of test hole (in):			4	Figure A-12				
Average Head (in):			11.9					

PERCOLATION TEST REPORT								
Project Name:		KIA Moreno Valley			Project No.:		T2844-22-01	
Test Hole No.:		P-3			Date Excavated:		12/17/2018	
Length of Test Pipe:		119.8 inches			Soil Classification:		ML	
Height of Pipe above Ground:		2.4 inches			Presoak Date:		12/17/2018	
Depth of Test Hole:		117.4 inches			Perc Test Date:		12/18/2018	
Check for Sandy Soil Criteria Tested by:				SP		Percolation Tested by:		SP
Water level measured from bottom of hole								
Sandy Soil Criteria Test								
Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)	
1	9:03 AM	25	25	42.6	42.5	0.1	208	
	9:28 AM							
2	9:28 AM	25	50	42.5	42.4	0.1	208	
	9:53 AM							
Soil Criteria: Normal								
Percolation Test								
Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)	
1	9:53 AM	30	30	42.4	42.2	0.1	250	
	10:23 AM							
2	10:23 AM	30	60	42.2	42.1	0.1	250	
	10:53 AM							
3	10:53 AM	30	90	42.1	42.0	0.1	250	
	11:23 AM							
4	11:23 AM	30	120	42.0	41.9	0.1	250	
	11:53 AM							
5	11:53 AM	30	150	41.9	41.8	0.1	250	
	12:23 PM							
6	12:23 PM	30	180	41.8	41.6	0.1	250	
	12:53 PM							
7	12:53 PM	30	210	41.6	41.5	0.1	250	
	1:23 PM							
8	1:23 PM	30	240	41.5	41.4	0.1	250	
	1:53 PM							
9	1:53 PM	30	270	41.4	41.3	0.1	250	
	2:23 PM							
10	2:23 PM	30	300	41.3	41.2	0.1	250	
	2:53 PM							
11	2:53 PM	30	330	41.2	41.0	0.1	250	
	3:23 PM							
12	3:23 PM	30	360	41.0	40.9	0.1	250	
	3:53 PM							
Infiltration Rate (in/hr):			0.01					
Radius of test hole (in):			4	Figure A-13				
Average Head (in):			41.0					

PERCOLATION TEST REPORT							
Project Name:		KIA Moreno Valley			Project No.:		T2844-22-01
Test Hole No.:		P-4			Date Excavated:		12/17/2018
Length of Test Pipe:		120.0 inches			Soil Classification:		ML
Height of Pipe above Ground:		0.0 inches			Presoak Date:		12/17/2018
Depth of Test Hole:		120.0 inches			Perc Test Date:		12/18/2018
Check for Sandy Soil Criteria Tested by:		SP			Percolation Tested by:		SP
Water level measured from bottom of hole							
Sandy Soil Criteria Test							
Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:06 AM	25	25	31.3	31.2	0.1	208
	9:31 AM						
2	9:31 AM	25	50	31.2	30.6	0.6	42
	9:56 AM						
Soil Criteria: Normal							
Percolation Test							
Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:56 AM	30	30	30.6	30.5	0.1	250
	10:26 AM						
2	10:26 AM	30	60	30.5	29.9	0.6	50
	10:56 AM						
3	10:56 AM	30	90	29.9	29.3	0.6	50
	11:26 AM						
4	11:26 AM	30	120	29.3	28.7	0.6	50
	11:56 AM						
5	11:56 AM	30	150	28.7	28.1	0.6	50
	12:26 PM						
6	12:26 PM	30	180	28.1	27.5	0.6	50
	12:56 PM						
7	12:56 PM	30	210	27.5	26.9	0.6	50
	1:26 PM						
8	1:26 PM	30	240	26.9	26.4	0.5	63
	1:56 PM						
9	1:56 PM	30	270	26.4	25.9	0.5	63
	2:26 PM						
10	2:26 PM	30	300	25.9	25.3	0.6	50
	2:56 PM						
11	2:56 PM	30	330	25.3	24.8	0.5	63
	3:26 PM						
12	3:26 PM	30	360	24.8	24.4	0.5	63
	3:56 PM						
Infiltration Rate (in/hr):		0.07					
Radius of test hole (in):		4			Figure A-14		
Average Head (in):		24.6					

APPENDIX B

LABORATORY TESTING

We performed laboratory tests in accordance with current, generally accepted test methods of ASTM International (ASTM) or other suggested procedures. We analyzed selected soil samples for *in-situ* density and moisture content, maximum dry density and optimum moisture content, expansion index, corrosivity, grain size distribution, consolidation characteristics, R-value and direct shear strength. The results of the laboratory tests are presented on Figures B-1 through B-5. The in-place dry density and moisture content of the samples tested are presented on the boring logs in *Appendix A*.

**SUMMARY OF LABORATORY MAXIMUM DRY DENSITY
AND OPTIMUM MOISTURE CONTENT TEST RESULTS
ASTM D1557**

Sample No.	Description	Maximum Dry Density (pcf)	Optimum Moisture Content (% of dry wt.)
B-1 @ 0-5'	Silty SAND (SM), reddish brown to light brown	135.2	6.7

**SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS
ASTM D4829**

Sample No.	Moisture Content		After Test Dry Density (pcf)	Expansion Index
	Before Test (%)	After Test (%)		
B-5 @ 0-5'	7.6	12.5	120.0	3

SUMMARY OF CORROSIVITY TEST RESULTS

Sample No.	Chloride Content (ppm)	Sulfate Content (%)	pH	Resistivity (ohm-centimeter)
B-1 @ 0-5'	98	0.001	8.3	4,600

Chloride content determined by California Test 422.
Water-soluble sulfate determined by California Test 417.
Resistivity and pH determined by Caltrans Test 643.

**SUMMARY OF LABORATORY R-VALUE TEST RESULTS
ASTM D2844**

Sample No.	R-Value
B-6 @ 0-5"	33

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PDT

LABORATORY TEST RESULTS

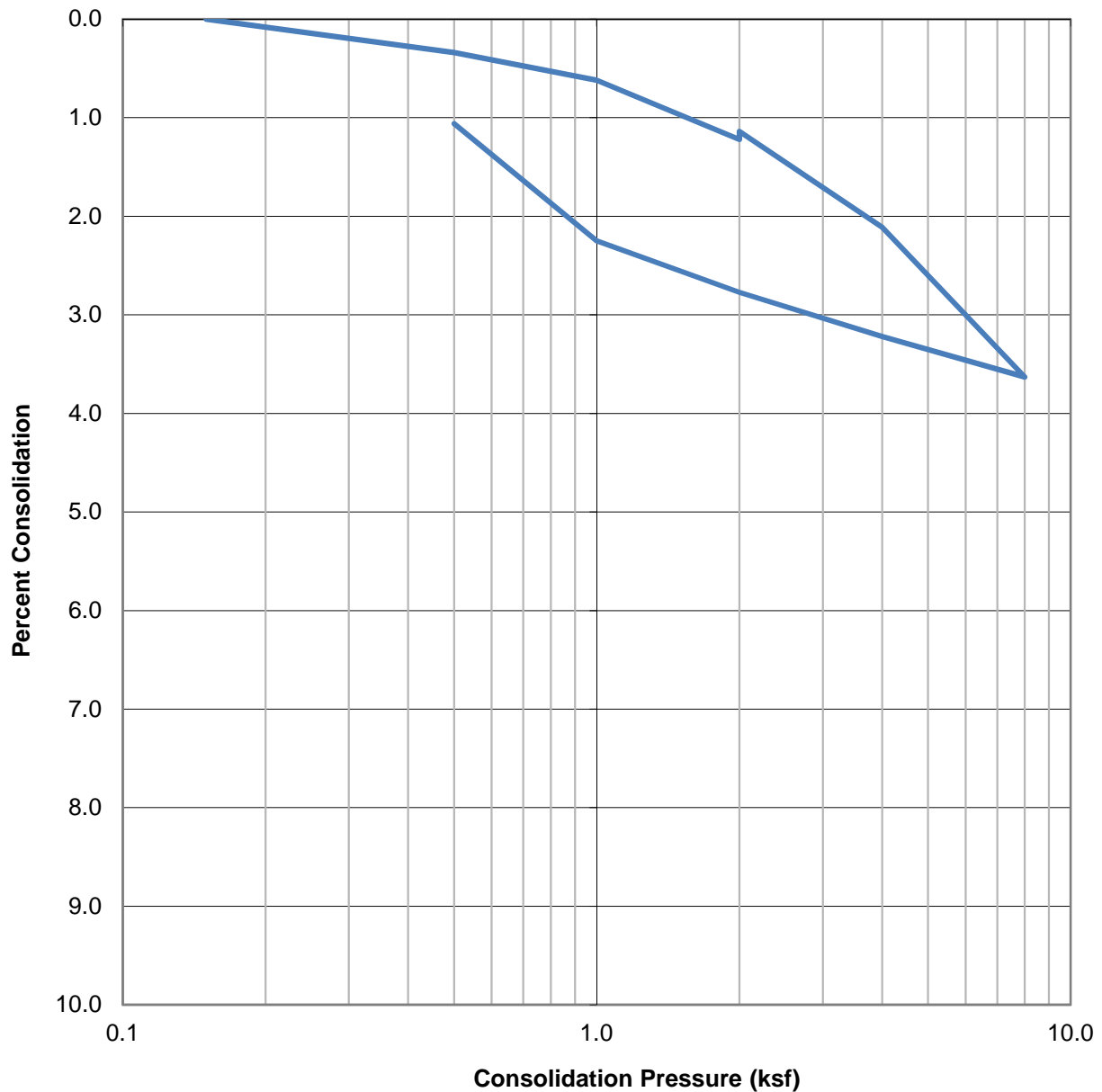
KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019

PROJECT NO. T2844-22-01

FIG B-1

WATER ADDED AT 2 KSF



SAMPLE ID	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B-2 @ 7.5'	ML	106.1	11.5	22.1

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CONSOLIDATION TEST RESULTS

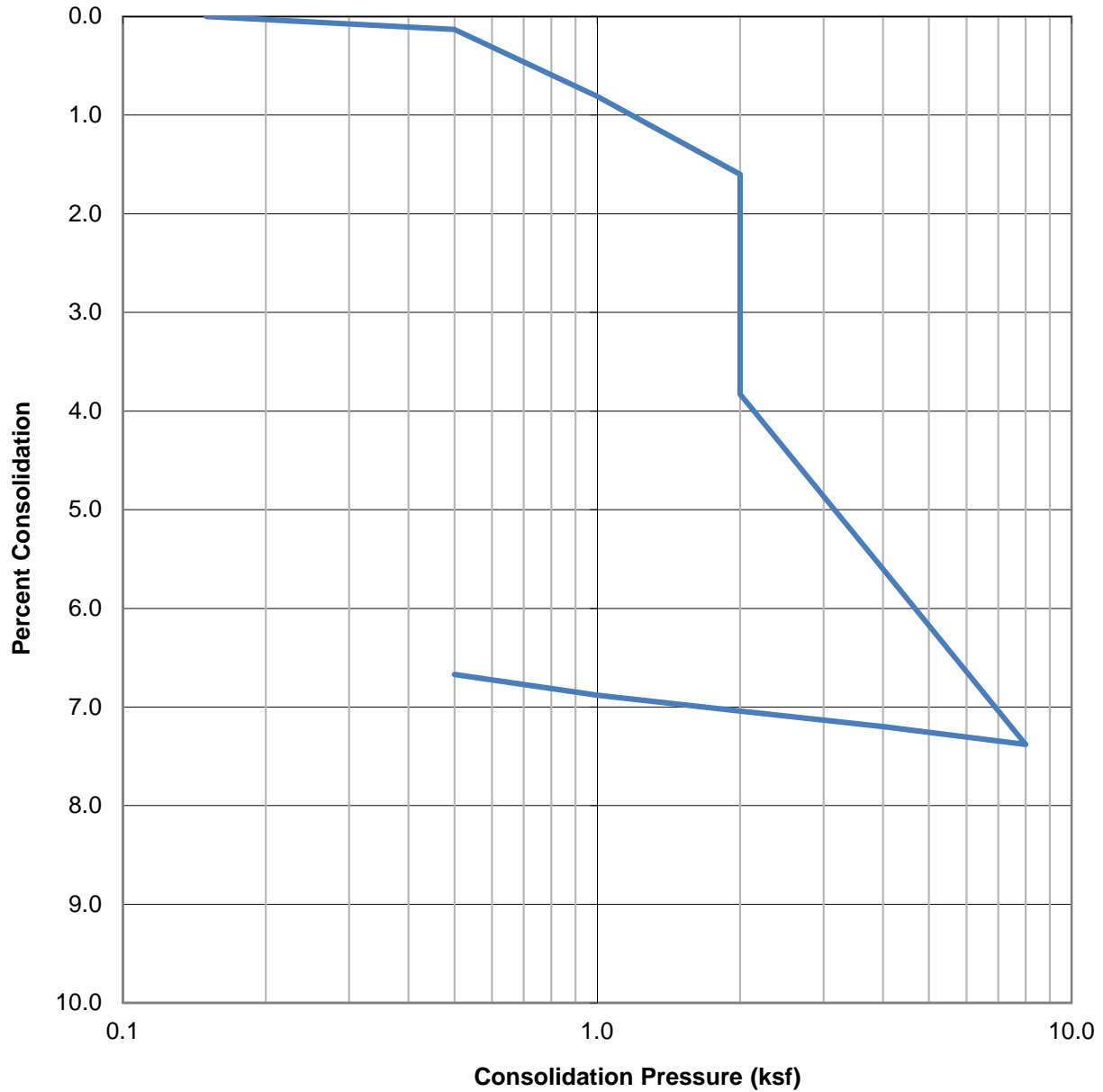
KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019

PROJECT NO. T2844-22-01

FIG B-2

WATER ADDED AT 2 KSF



SAMPLE ID	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B-5 @ 2.5'	SM	116.6	6.5	13.1

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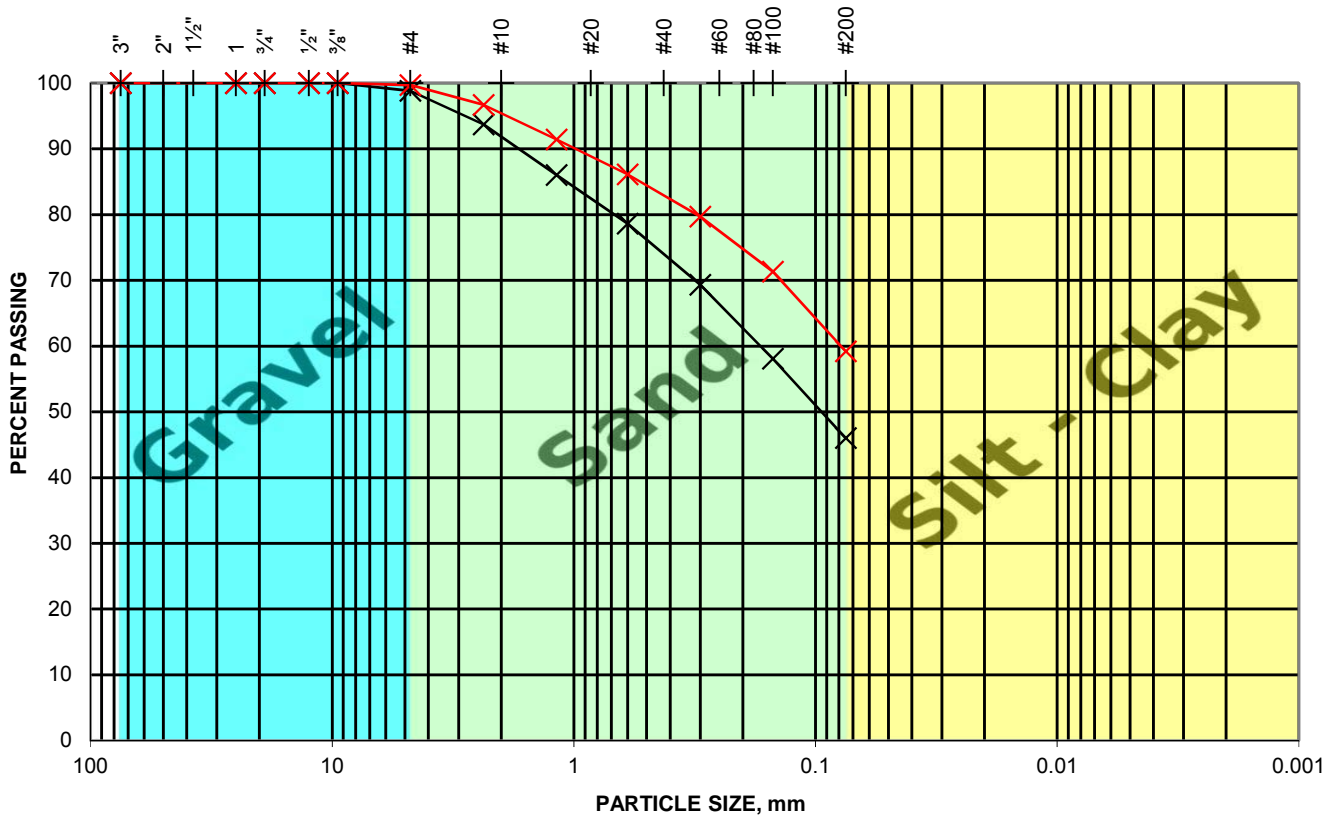
CONSOLIDATION TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019

PROJECT NO. T2844-22-01

FIG B-3



SAMPLE ID	SAMPLE DESCRIPTION
P-1/P-2 Blend	SM - Silty Sand, trace gravel
P-3/P-4 Blend	ML - Sandy SILT

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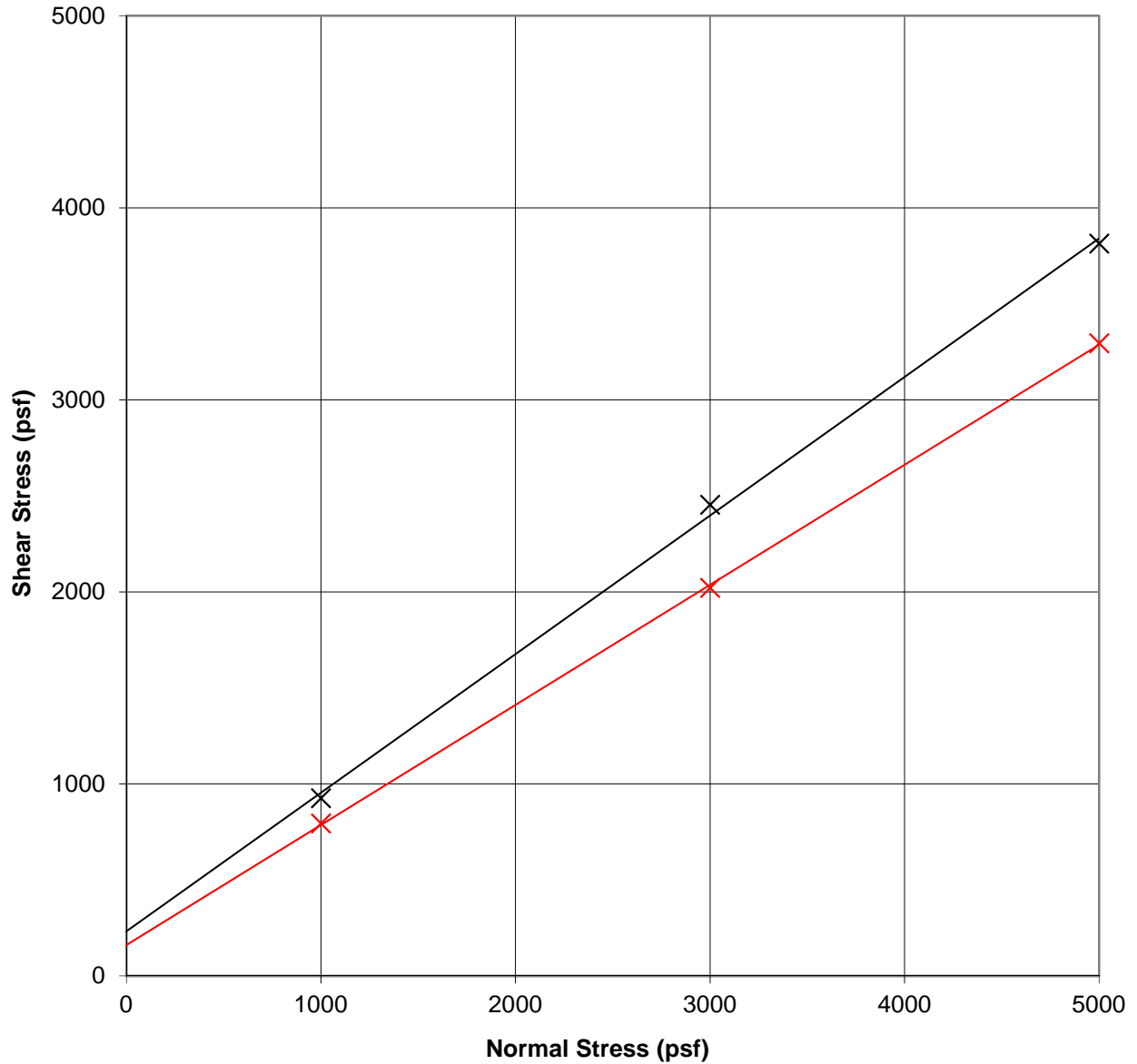
GRAIN SIZE DISTRIBUTION

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019

PROJECT NO. T2844-22-01

FIG B-4



SAMPLE ID	SOIL TYPE	INITIAL DRY DENSITY (pcf)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)	C (psf)	ϕ (deg)
*B-1 @ 0-5'	SM	121.7	6.7	11.3	230	36
B-2 @ 5'	ML	96.7	9.6	23.3	160	32

*Sample remolded to approximately 90% of the test maximum dry density at optimum moisture content.

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DIRECT SHEAR TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019

PROJECT NO. T2844-22-01

FIG B-5

APPENDIX C

RECOMMENDED GRADING SPECIFICATIONS

FOR

KIA MORENO VALLEY
SOUTHEAST OF MORENO BEACH DRIVE
AND AUTO MALL WAY
MORENO VALLEY, CALIFORNIA

PROJECT NO. T2844-22-01

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

- 1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.
- 1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.
- 1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

- 2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.
- 2.2 **Contractor** shall refer to the Contractor performing the site grading work.
- 2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.
- 2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

- 2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.
- 2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.
- 2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

- 3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.
- 3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than $\frac{3}{4}$ inch in size.
- 3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.
- 3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than $\frac{3}{4}$ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.
- 3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.
- 3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9

and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

- 3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.
- 3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.
- 3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition

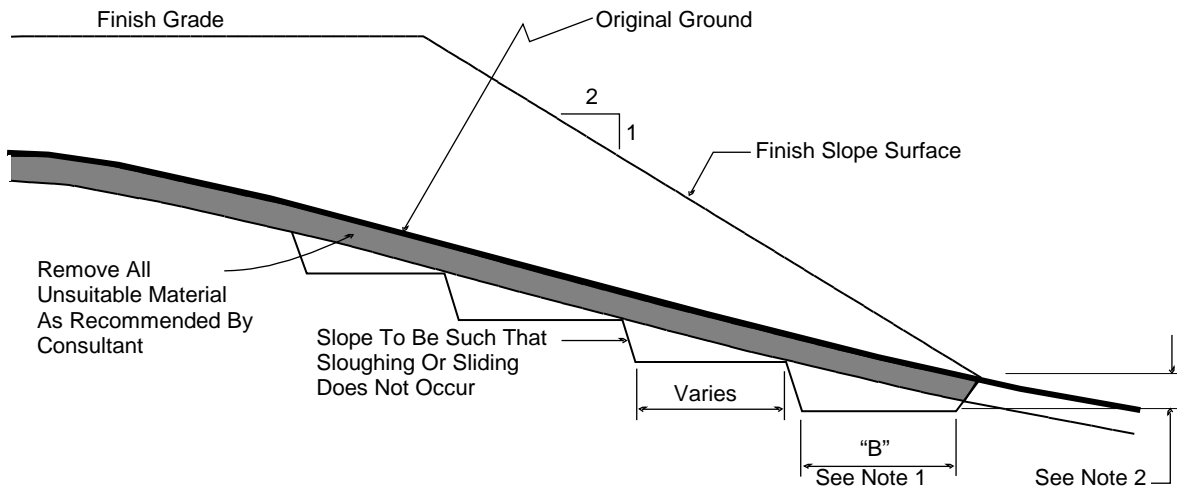
4. CLEARING AND PREPARING AREAS TO BE FILLED

- 4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.
- 4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



No Scale

- DETAIL NOTES:
- (1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.
 - (2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

- 5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.
- 5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

- 6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:
- 6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.
- 6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.
- 6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.
- 6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.
- 6.1.5 After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

- 6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.
 - 6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.
 - 6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.
- 6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:
- 6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.
 - 6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.
 - 6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.
 - 6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

- 6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.
- 6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.
- 6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:
- 6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.
- 6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.
- 6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection

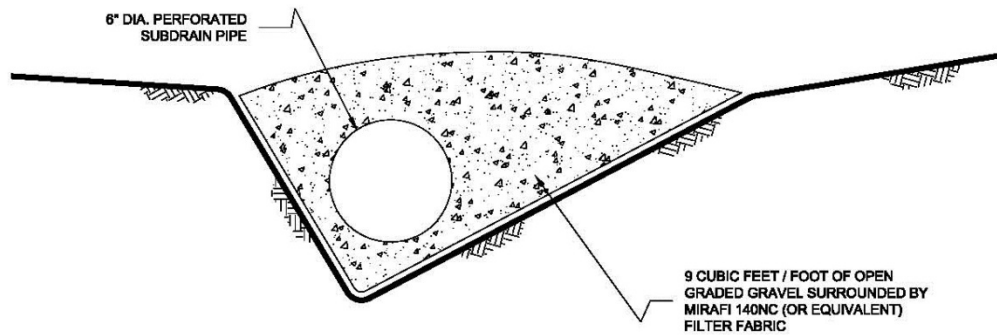
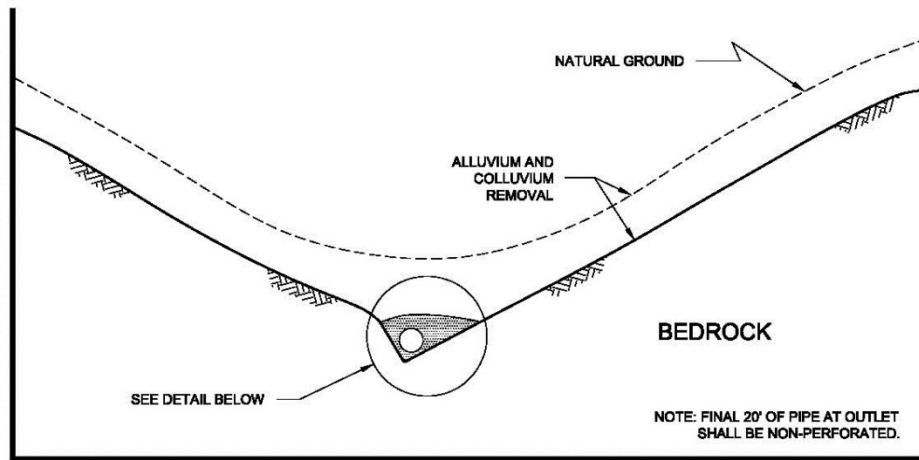
variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

- 6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of “passes” have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.
- 6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.
- 6.3.6 To reduce the potential for “piping” of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.
- 6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

- 7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL CANYON DRAIN DETAIL



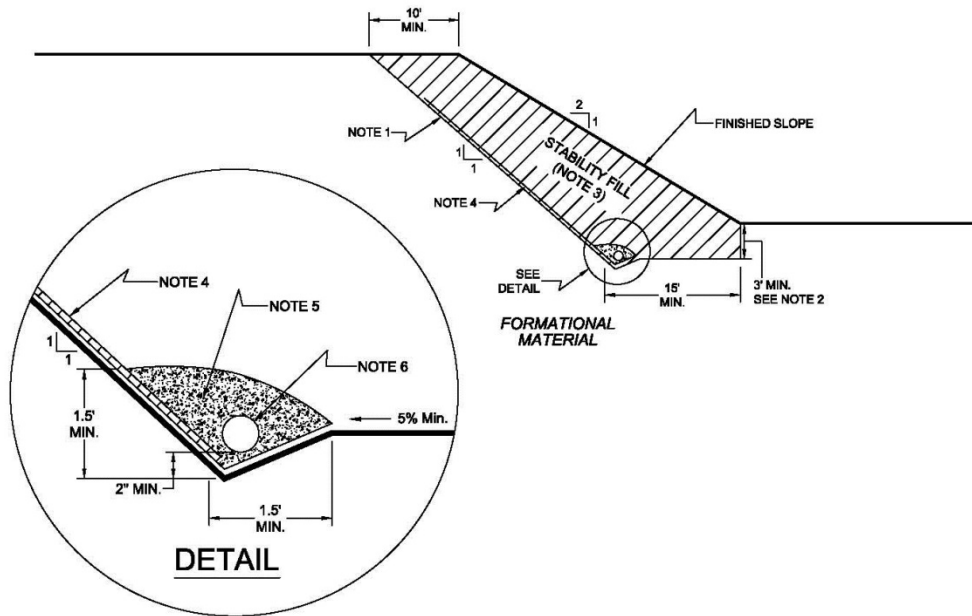
NOTES:

- 1.....8-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.
- 2.....6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or larger) pipes.

TYPICAL STABILITY FILL DETAIL



NOTES:

- 1.....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).
- 2.....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.
- 3.....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.
- 4.....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.
- 5.....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).
- 6.....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

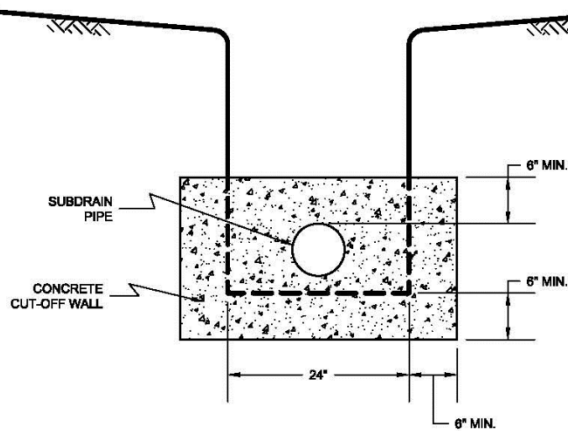
NO SCALE

- 7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.
- 7.4 *Rock fill or soil-rock fill* areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock fill* drains should be constructed using the same requirements as canyon subdrains.

7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

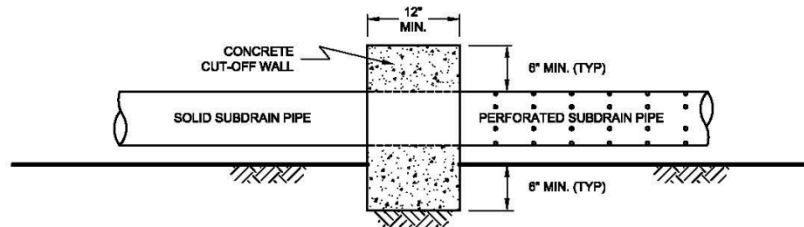
TYPICAL CUT OFF WALL DETAIL

FRONT VIEW



NO SCALE

SIDE VIEW

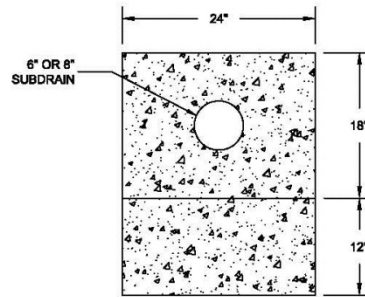


NO SCALE

7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

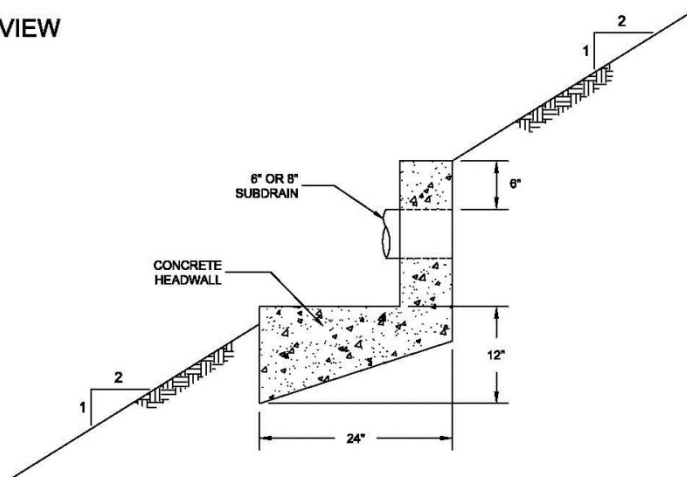
TYPICAL HEADWALL DETAIL

FRONT VIEW



NO SCALE

SIDE VIEW



NOTE: HEADWALL SHOULD OUTLET AT TOE OF FILL SLOPE
OR INTO CONTROLLED SURFACE DRAINAGE

NO SCALE

- 7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an “as-built” map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

- 8.1 The Consultant shall be the Owner's representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.
- 8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.
- 8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.
- 8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.
- 8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.
- 8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

- 8.6.1.1 Field Density Test, ASTM D 1556, *Density of Soil In-Place By the Sand-Cone Method.*

- 8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)*.
- 8.6.1.3 Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop*.
- 8.6.1.4. Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

- 9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.
- 9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

- 10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.
- 10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

APPENDIX E: PHASE I PALEONTOLOGICAL RESOURCES ASSESSMENT



**PHASE I PALEONTOLOGICAL RESOURCES ASSESSMENT:
CARS PROS KIA PROJECT, THE CITY OF MORENO VALLEY,
RIVERSIDE COUNTY, CALIFORNIA**

Prepared for:

Cars Pro Automotive Group

EPD Solutions, Inc.

2030 Main St., Ste. 1200

Irvine, CA 92614

Prepared by:

Jennifer Kelly, M.Sc. and Sonia Sifuentes, M.Sc., RPA

Principal Investigator:

Jennifer Kelly, M.Sc., Riverside County Qualified Paleontologist
Material Culture Consulting, Inc.

2701-B North Towne Avenue

Pomona, CA 91767

626-205-8279

March 2019

MCC Project Number: 20190304

Type of Study: Paleontological resources assessment

Paleontological Resources within Area of Potential Impact: None

Paleontological Sensitivity: High Sensitivity B

USGS 7.5-minute Quadrangle: Sunnymead, Section 2 of Township 3 S, Range 3 W

City and County: Moreno Valley, Riverside County

Survey Acreage: Approx. 6.3 acres

APN(s): 488-390-015 and 488-390-016

Date of Fieldwork: March 1, 2019

Key Words: Paleontology, CEQA, Phase I Survey, Riverside County, High Sensitivity B

MANAGEMENT SUMMARY

Cars Pro Automotive Group proposes the construction of a new automotive commercial complex, called Kia Moreno Valley (Project). The proposed Project consists of two parcels totaling approximately 6.3 acres (APN 488-390-015 and 488-390-016), located at the intersection of Auto Mall Drive and Moreno Beach Drive in the City of Moreno Valley, Riverside County, California. The proposed Project consists of construction of a sales and service facility building which will include a service reception, a parts receiving location and multiple vehicle display areas. 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 assessment was conducted in accordance with the California Environmental Quality Act (CEQA) and included a locality search, an examination of geologic maps and paleontological literature, and a field survey.

Based on the paleontological literature, the Project Area is mapped as surficial younger Quaternary alluvium with older Quaternary alluvium at unknown deposits. No significant paleontological resources were identified directly within the Project Area during the locality search or the field survey. The locality search conducted by the Natural History Museum of Los Angeles County (NHMLA) did yield nearby localities from sedimentary deposits similar to those that may occur subsurface in the Project Area. The Riverside County Land Information System (RCLIS) GIS data reveals all of the Project Area lie 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, could impact paleontological resources. Therefore, MCC recommends the following procedures:

- 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 Material Culture Consulting, Inc., located in Pomona, California.

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APPENDICES

APPENDIX A: QUALIFICATIONS

APPENDIX B: NMHLA and MioMap RESULTS

INTRODUCTION AND SETTING

Cars Pro Automotive Group proposes the construction of a new automotive commercial complex, called Kia Moreno Valley (Project). The proposed Project consists of two parcels totaling approximately 6.3 acres (APN 488-390-015 and 488-390-016), located at the intersection of Auto Mall Drive and Moreno Beach Drive in the 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. This study included a locality records search, an examination of geologic maps and paleontological literature and field survey to determine whether the proposed project would adversely affect any significant paleontological resources. 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 a 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. The lead agency for this Project is the City of Moreno Valley.

PROJECT LOCATION AND DESCRIPTION

The Project is located in the City of Moreno Valley, located within northwestern Riverside County (Figure 1). The Project consists of two vacant parcels totaling approximately 6.3 acres (APNs 488-390-015 and 488-390-016), located at the intersection of Auto Mall Drive and Moreno Beach Drive in the City of Moreno Valley, Riverside County, California (Figures 2 and 3). The Project Area is situated northeast of the Moreno Peak and south of the Moreno Valley highway (State Route 60). Specifically, the Project Area is bounded by Auto Mall Drive to west/northwest, Moreno Beach Drive to the south, Pettit Street to the north, and a vacant lot east. Specifically, the proposed Project is located within Section 2, Township 3 South, Range 3 West on the Sunnymead USGS 7.5-minute quadrangle (San Bernardino Base Meridian) (Figure 2). The proposed Project is a Kia vehicle sales and service facility with a car wash.

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 ten years of experience in environmental and paleontological compliance in California (See Appendix A).

Sonia Sifuentes, M.A., RPA, Material Culture archaeologist and cross-trained paleontologist, co-authored this report. Ms. Sifuentes has a M.Sc in Archaeology of the North from University of Aberdeen, Scotland, a B.A. in Anthropology from University of Southern California, and over ten years of experience as an archaeologist in Southern California, including completion of several projects in Riverside County and three years of professional experience working as a cross-trained paleontologist in Southern California. Julia Carvajal, B.A., Material Culture archaeologist and cross-trained paleontologist, conducted the pedestrian survey on March 1, 2019. Ms. Carvajal has completed her M.A. coursework in Archaeology at California State University, Los Angeles and her B.A. in Anthropology from California State Polytechnic University, Pomona. Ms. Carvajal has over eight years of experience as an archaeologist in Southern California including completion of several projects in Riverside County and two years of professional experience working as a cross-trained paleontologist in Southern California.

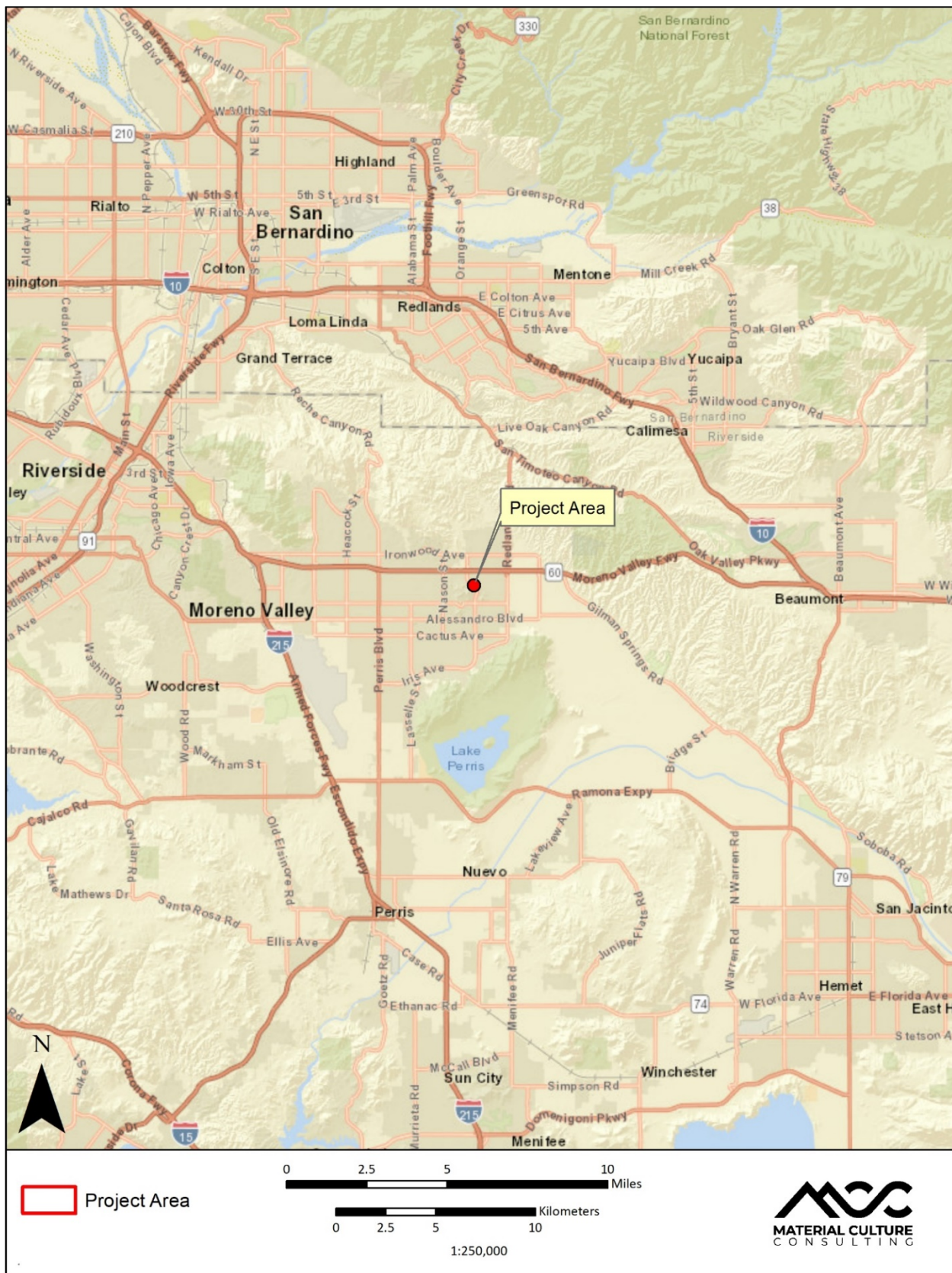


Figure 1. Cars Pro Kia Project Vicinity (1:250,000)

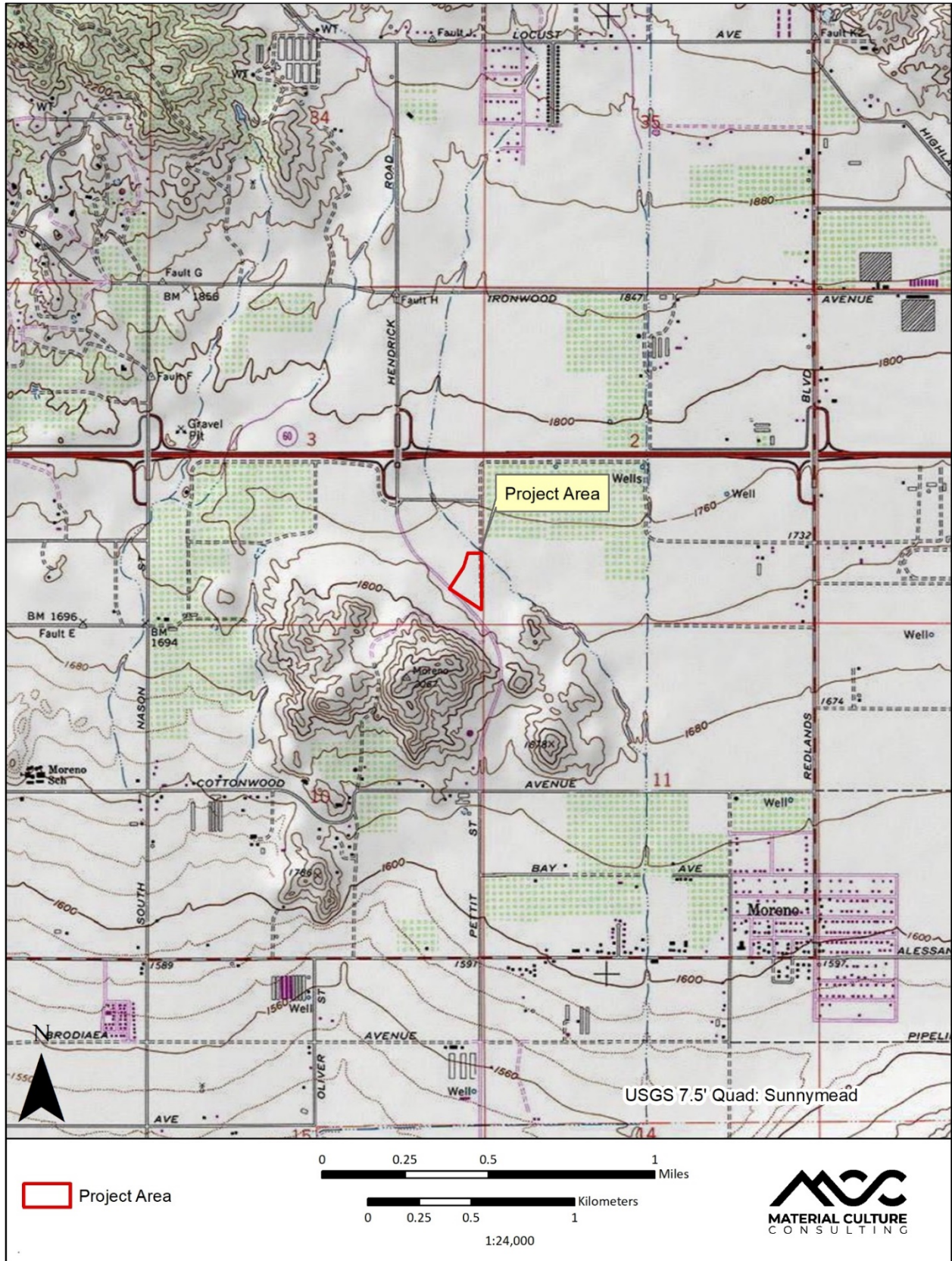


Figure 2. Cars Pro Kia Project Location (as depicted on Sunnymead USGS 7.5 minute Quadrangle, 1:24,000)

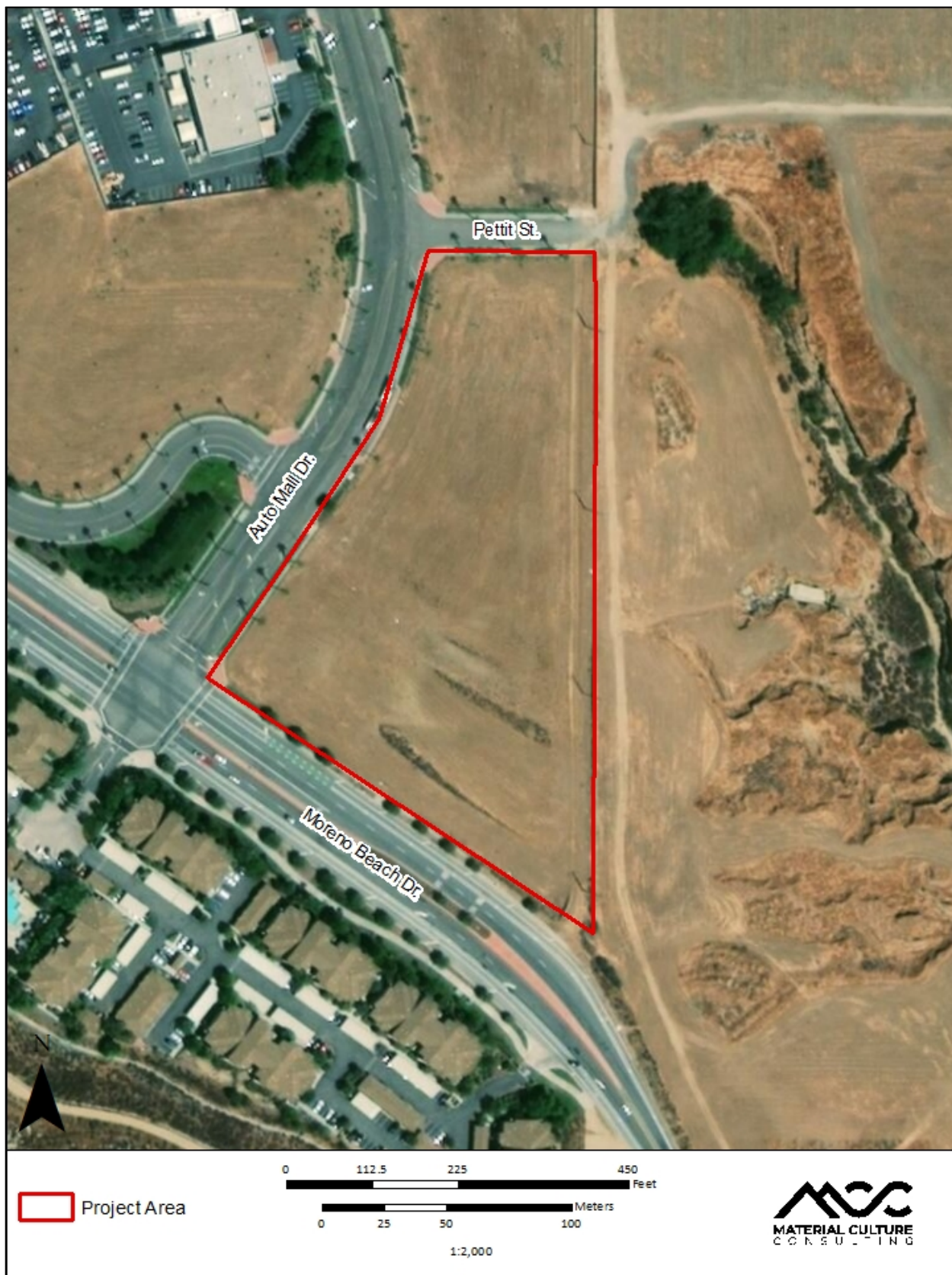


Figure 3. Cars Pro Kia Project Area (as depicted on aerial photograph, 1:2,000)

ENVIRONMENTAL SETTING

The Project Area is located within the City of Moreno Valley city limits in northwestern Riverside County, approximately 0.43 mile south of California State Route 60. Bounded by the Box Springs Mountain to the north, the Badlands to the east, and Lake Perris Recreation Area and associated mountains to the south, the Project Area is located within a relatively flat valley floor that is surrounded by hills and mountains. Elevations are approximately 533 meters (m) (1748 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 comprised the Southern California Batholith, a great mass of basement igneous rocks. Vegetation observed within the Project Area include invasive grasses and weeds and brittle bush observed along the southern portion. Non-native landscaping is present within the surround region, with a residential and commercial development located to the South-southwest and Northwest of the Project Area. The climate in the region is characterized as Mediterranean, with hot, dry summers and temperate, wet winters.

GEOLOGICAL CONTEXT

The Project Area lies within the Sunnymead quadrangle, which lies 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, and 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 mostly Quaternary alluvium with the southern portion mapped within Mesozoic granitic rock by Jennings, Strand, and Rogers (1977, Figure 4). Additional literature maps the northeastern portion of the Project Area within surficial Quaternary alluvial fan deposits and within the southwestern-most portion of the Project Area is early Pleistocene alluvial fan deposits with exposures of Cretaceous tonalite to the south of the Project Area (Morton and Matti 2001, Figure 5).

Plutonic igneous rocks/tonalite (Kt) are generic Cretaceous rocks of the Peninsular Ranges batholith. These are intrusive igneous bedrock made of mainly biotite-hornblende tonalite not associated with specific plutons (Morton and Matti 2001). These rocks are gray, medium-grained and typically foliated.

Young Quaternary alluvial fan deposits (arenaceous to gravel) (Qya_{ag}) are Holocene to late Pleistocene-aged alluvial fan deposit that is derived from lithically diverse sediment units. The sediments range from arenaceous to gravel and are gray-hued, slightly consolidated sand (Morton and Matti 2001).

Very Old Alluvial fan deposits (Qvof) are early Pleistocene deposits consisting of mostly well-dissected, well-indurated, reddish-brown sand deposits with minor gravel (Morton and Matti 2001). These deposits are commonly flanking bedrock areas and can contain duripans and locally silcretes (Morton and Matti 2001). These sediments are derived as alluvial fan deposits from the elevated terrain located immediately to the south of the Project Area (McLeod 2019). The surficial sediments can be relatively coarse and lack significant vertebrate fossils in the uppermost layers but may have pockets of finer-grained Quaternary deposits that do contain significant vertebrate fossils (McLeod 2019).

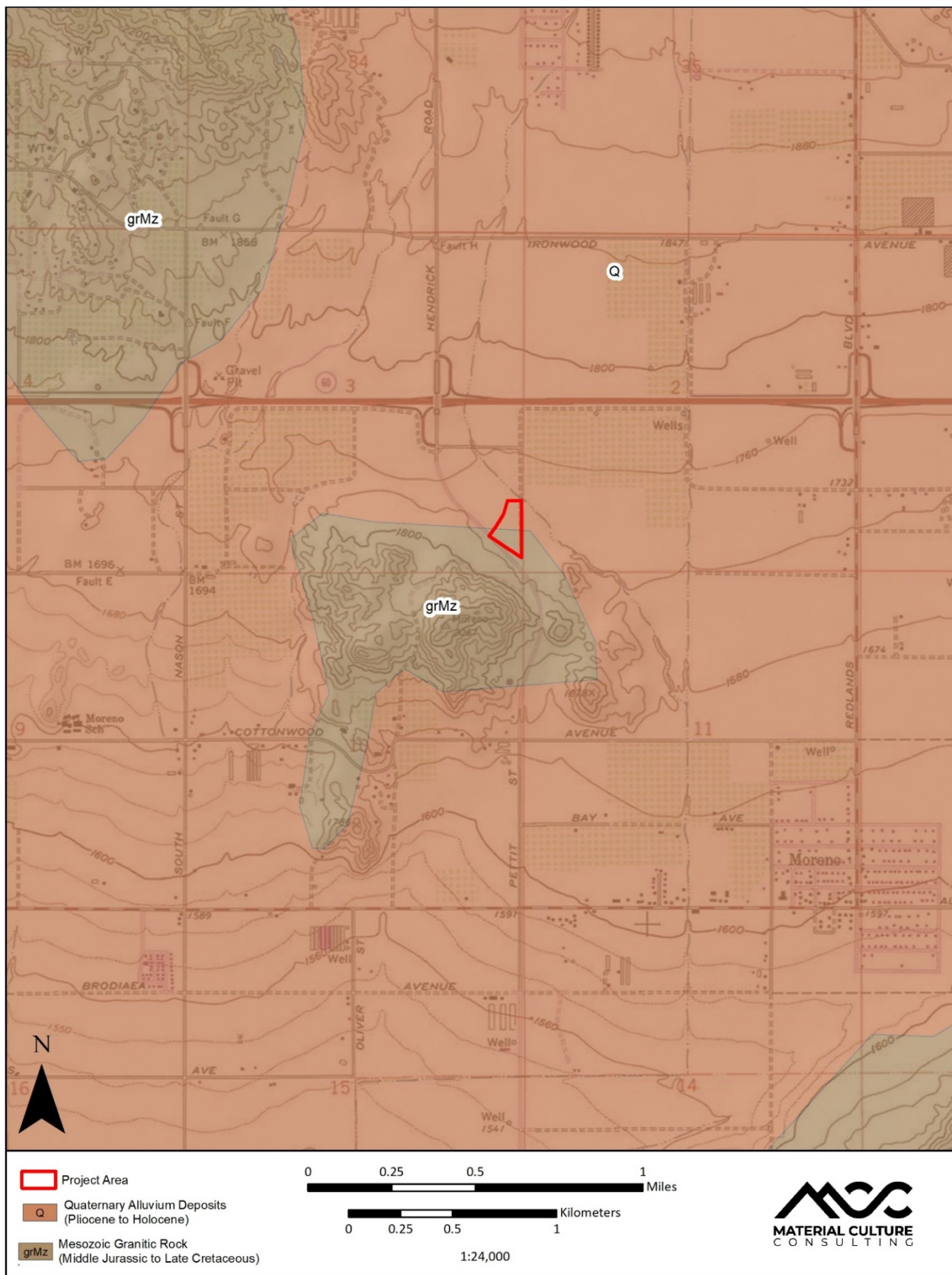


Figure 4. Cars Pro Kia Project Geologic Map (from Jennings, Strand, and Rogers 1977, 1:24,000)

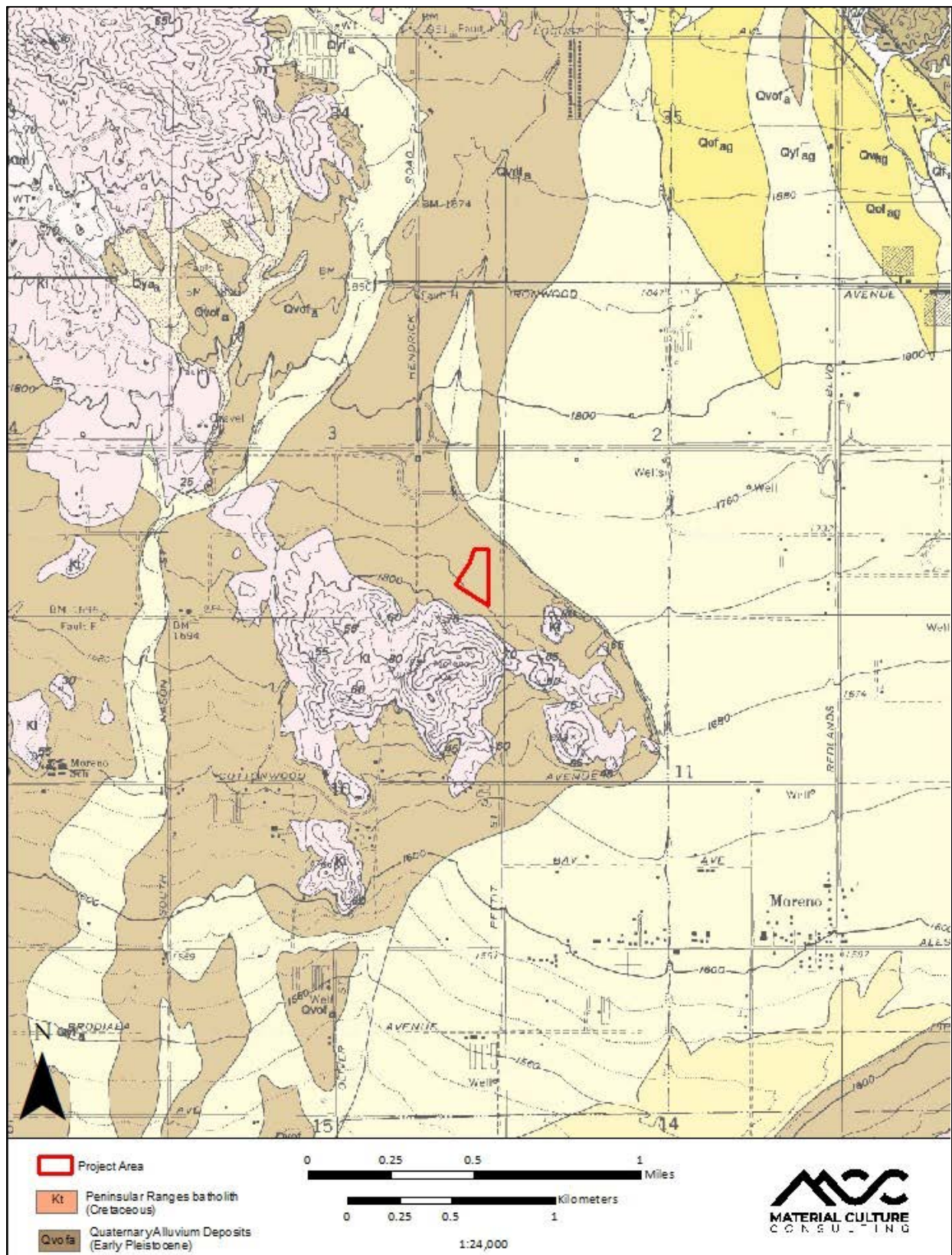


Figure 5. Cars Pro Kia Project Geologic Map 2 (from Morton and Matti 2001, 1:24,000)

RESEARCH DESIGN

The 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. The 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. Guidelines set forth by Riverside County were consulted to ensure that all local and state requirements were met.

The Riverside County Land Information System (RCLIS) overlay map defines what significant impact on paleontological resources consists of, and requires monitoring of, activities within designated High sensitivity areas (both High A and B) that may affect these resources. Areas with a "High Potential" for paleontological resources include sedimentary rock units with a high 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. High sensitivity areas are mapped as either "High A" or "High B."

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:

- MM-1. 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.

Paleontological resources (fossils) are the remains of prehistoric life. 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 evidence of ancient life, and as such provide an invaluable window into the past. Fossils are considered non-renewable resources and in California, impacts to paleontological resources must be considered pursuant to CEQA requirements for environmental reviews.

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 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. The County of Riverside also provides a paleontological resource sensitivity map for the entire county (RCLIS). This map was consulted by MCC staff on February 13, 2019. Additional sources reviewed included the University of California Museum of Paleontology (UCMP) Miocene Mammal Mapping Project (MioMap) and the Paleobiology Database (PBDB).

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 February 19, 2019, the results of a locality search were provided by the Natural History Museum of Los Angeles County (NHMLA) of Los Angeles, California (Appendix B). This search identified any vertebrate localities in the NHMLA 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 March 1, 2019, MCC qualified archaeologist and crossed-trained paleontologist Julia Carvajal 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

NHMLA LOCALITY SEARCH AND LITERATURE REVIEW RESEARCH

The record search results from the NHMLA (McLeod 2019, Appendix B) did not indicate 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. The closest vertebrate fossil locality from similar deposits is LACM 4540, from gravel pits just west of the Jack Rabbit Trail, located east-southeast of the Project Area. This locality produced a fossil specimen of horse (*Equus*) at unknown depth (McLeod 2019).

The Paleobiology Database (PBDB) yielded no results within the region. The MioMap yielded seven fossil assemblage localities located within 5 miles of the Project Area (Appendix B). The closest fossil assemblage is mapped approximately 3.6 miles northeast of the Project Area within San Timoteo Canyon, which contained fossil specimen of mammoth (*Mammuthus imperator*) (Carrasco et al. 2005). Six of these assemblages were found within the San Timoteo Formation and one was found within the Upper San Timoteo Formation. The RCLIS map indicates that the Project Area has a high potential (High B) to produced paleontological resources during ground disturbing activities that reach 5 ft and below depth (Figure 5).

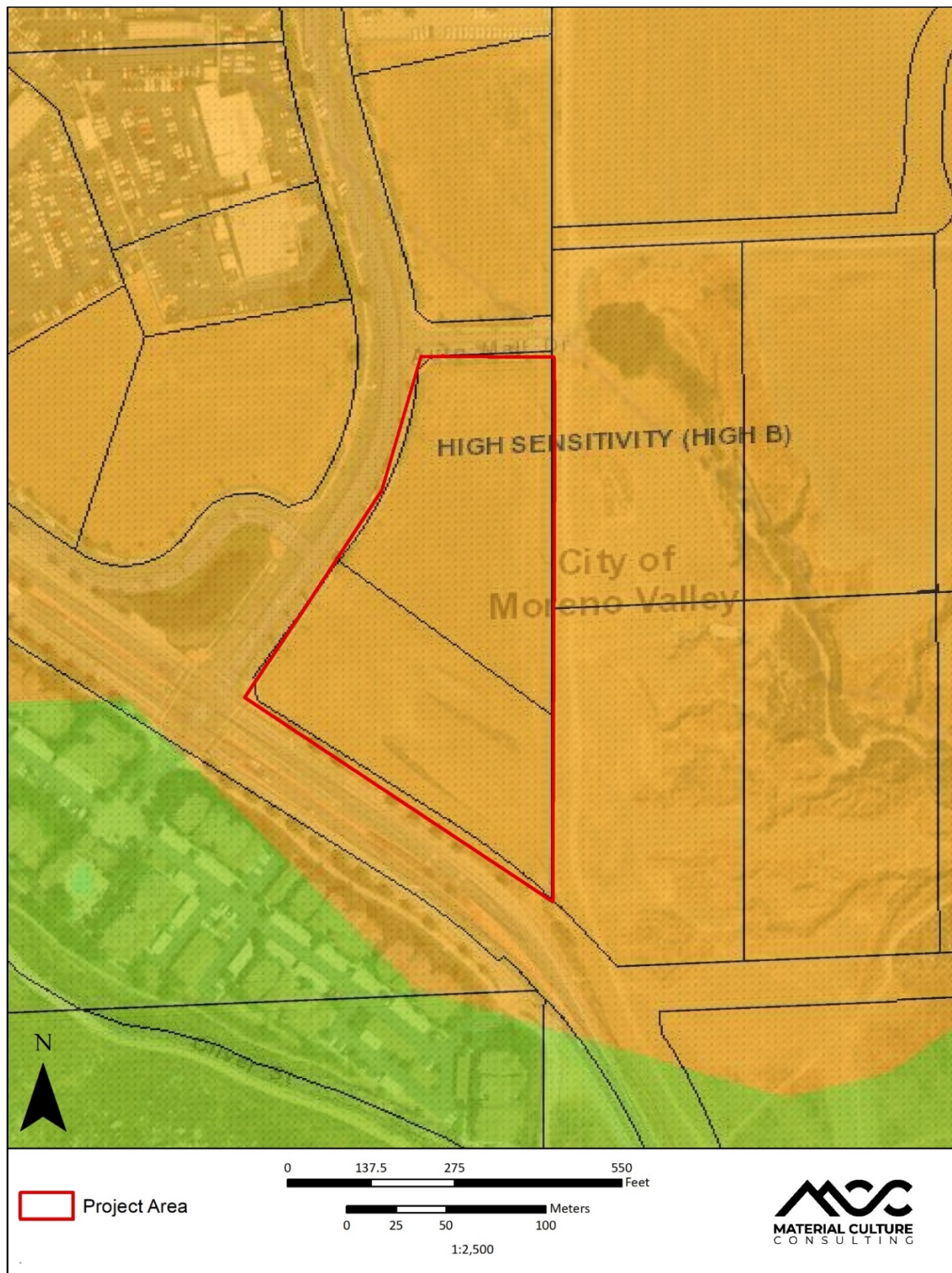


Figure 6. Paleontological Sensitivity (from RCLIS, orange indicates High B Sensitivity, green indicates Low Sensitivity)

PALEONTOLOGICAL FIELD SURVEY RESULTS

On March 1, 2019, the paleontological field survey of the Project Area was conducted by Ms. Carvajal. Overall, field conditions were good and visibility ranged greatly within the Project Area. In areas with recent grading activities, such as a two-track dirt road located along the Eastern boundary had 100 percent visibility. Elsewhere, dense vegetation coverage, particularly within the Southern portion of the Project Area, had reduced visibility to less than 10 percent. The entire area shows heavy disturbance from grading and dumping activities. There is a small mound observed within the southern portion of the Project Area, which runs in a Northwest-Southeast direction. This mound appears unnatural, most likely an old push pile, with remnants of pavement, concrete, and natural occurring granite and cryptocrystalline (CCS) rock observed. The mound measures 34 m (Northeast to Southwest) and 72 m (Northwest to Southeast). There is evidence of modern dumping surrounding the mound and a homeless encampment was observed within the Southeast corner of the Project Area. Due to the presence of the encampment, this section of the Project Area was not surveyed, approximately .35 acres total. Soil observed is consistent with the mapped Quaternary sediments with the only major inclusions observed the rocks located within the mound. No paleontological resources were observed during the field survey. Representative photos of the area are found in Figures 6-12.



Figure 7. Project Area from Northwest corner, view East



Figure 8. Overview of Project Area, small mound in background, view Southeast



Figure 9. Representative photo of sediments and inclusions observed within Project Area



Figure 10. Overview of Project Area from Southwest corner, view North



Figure 11. Overview of Project Area from top of mount, view West



Figure 12. Overview of Project Area from Northeast corner, view South



Figure 13. Overview of homeless encampment and area not surveyed, view South-Southeast

SUMMARY AND RECOMMENDATIONS

MCC conducted a Phase I paleontological resource assessment of the Project Area that included a fossil locality records search, literature review, and an intensive pedestrian survey covering majority of the 6.3 acres. No significant paleontological resources were identified within the Project Area during the locality search or field survey. However, there are nearby fossil localities that have known significant paleontological resources within sedimentary deposits that are mapped within the Project Area. The uppermost layers of soil within the Project Area consists of Quaternary alluvium that may have older, fine-grained Quaternary deposits that may encounter significant fossil vertebrates. In addition, the Project Area is mapped in RCLIS as High B is based on 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 ft.

RECOMMENDED MITIGATION

Based on the results of the Phase I paleontological resource assessment, the proposed 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 Management Plan (PRMP) 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 PRMP. At a minimum, the PRMP 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 5 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: March 15, 2019

Signature:  _____

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

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Appendix A: Qualification