A PHASE I CULTURAL RESOURCES SURVEY FOR THE VERANO RESIDENTIAL PROJECT

CITY OF CATHEDRAL CITY, CALIFORNIA

APNs 677-050-017, -018, -027, -029, and -031 through -034

Project Site Location: Section 5 of Township 4 South, Range 5 East of the *Cathedral City, California* USGS Quadrangle

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Fieldwork Performed: June 5 and 6, 2023.
Key Words: 128.34 acres; Phase I survey; negative results; monitoring of initial grading recommended.

Archaeological Report Summary Information

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Report Title:	A Phase I Cultural Resources Survey for the Verano Residential Project, City of Cathedral City, Riverside County, California
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Assessor's Parcel Numbers:	APNs 677-050-017, -018, -027, -029, and -031 through -034
USGS Quadrangle:	Section 5, Township 4 South, Range 5 East, of the *Cathedral City, California* USGS Quadrangle
Study Area:	128.34 acres
Key Words:	Archaeological survey; negative; City of Cathedral City; *Cathedral City, California* USGS Quadrangle; monitoring of initial grading recommended.

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1.0 MANAGEMENT SUMMARY/ABSTRACT

The following report describes the results of the cultural resources survey program conducted by BFSA Environmental Services, a Perennial Company (BFSA), for the 128.34-acre Verano Residential Project. The project includes Assessor's Parcel Numbers (APNs) 677-050-017, -018, -027, -029, and -031 through -034 within the city of Cathedral City, Riverside County, California. The subject property is situated between the Whitewater River and Interstate 10 in Cathedral City, Riverside County, California, within Section 5, Township 4 South, Range 5 East, of the San Bernardino Baseline and Meridian on the U.S. Geological Survey (USGS) (7.5-minute) *Cathedral City, California* topographic quadrangle map. More specifically, the project is located north of the intersection of Verona Road and Ventura Drive. The applicant proposes to construct a residential development within the parcels along with associated landscaping and infrastructure. In addition, the project includes off-site improvements consisting of the restoration of an existing sand berm along the western boundary and an access road for sand berm maintenance along a portion of the northern boundary of the property.

1.1 Purpose of Investigation

BFSA conducted the archaeological assessment to locate and record any cultural resources present within the project in compliance with the California Environmental Quality Act (CEQA) and following City of Cathedral City guidelines. The purpose of this investigation was to determine if any significant cultural resources would be affected by the proposed land development. This study consisted of the processing of a records search of previously recorded archaeological sites on or near the property and the completion of an archaeological survey of the property. The records search was requested from the Eastern Information Center (EIC) at the University of California, Riverside (UCR). In addition, the Native American Heritage Commission (NAHC) was contacted for a Sacred Lands File (SLF) search.

1.2 Major Findings

The EIC records search did not identify any recorded resources within the subject property. However, the search did identify four resources within one mile of the subject property. During the survey, ground visibility was generally characterized as good. The pedestrian survey identified evidence that the property has been previously cleared and disturbed as supported by aerial photographs between 1996 and 2002. Although it appears areas of the project have previously been graded, the level of these previous impacts is not clear. This characterization of the property as surficially disturbed is relevant to the consideration of cultural resources being present within the project. When parcels are cleared, disked, or otherwise disturbed, evidence of surface artifact scatters is lost. Whether or not cultural resources have ever existed within this property, the current status of the area appears to have affected the potential to discover any evidence of surface artifact scatters.

1.3 Recommendation Summary

Given the uncertainty of the level of prior impacts to the property coupled with the project's proximity to prehistorically exploited natural resources, such as the Whitewater River and ancient Lake Cahuilla, monitoring of grading is recommended. Consistent with the General Plan and the General Plan Final Environmental Impact Report (EIR), as a condition of approval, the project will implement a cultural resources monitoring program conducted by an archaeologist during the initial clearing and grading of the property (first three to five feet). However, the consulting archaeologist shall have the authority to modify and reduce the monitoring program to either periodic spot-checks or suspension of the monitoring program should the potential for cultural resources appear to be less than anticipated.

A copy of this report will be permanently filed with the EIC at UCR. All notes, photographs, and other materials related to this project will be curated at the archaeological laboratory of BFSA in Poway, California.

2.0 INTRODUCTION

BFSA was retained by the project applicant to conduct a cultural resources survey for the Verano Residential Project. The archaeological survey was conducted in order to comply with CEQA and City of Cathedral City guidelines with regards to potential development-generated impacts to cultural resources. The project is located in an area of low to moderate cultural resource sensitivity, as suggested by the local topography. Sensitivity for cultural resources in a given area is usually indicated by known settlement patterns which, in Riverside County, are focused around environments with accessible food and water.

The project is situated between the Whitewater River and Interstate 10 in Cathedral City, Riverside County, California, within Section 5, Township 4 South, Range 5 East, of the San Bernardino Baseline and Meridian on the USGS (7.5-minute) *Cathedral City, California* topographic quadrangle map (Figures 2.0–1 and 2.0–2). More specifically, the project is located north of the intersection of Verona Road and Ventura Drive and includes APNs 677-050-017, -018, -027, -029, and -031 through -034, which total 128.34 acres. The project applicant proposes to construct a residential development within the parcels along with associated landscaping and infrastructure. In addition, the project includes off-site improvements consisting of the restoration of an existing sand berm along the western boundary and an access road for sand berm maintenance along a portion of the northern boundary of the property (Figure 2.0–3).

Principal Investigator Tracy A. Stropes, M.A., RPA, directed the cultural resources study for the project. Staff archaeologist Sabrina Corcoran conducted the pedestrian survey of the project and off-site improvement areas on June 5 and 6, 2023. The surveys were conducted in 15-meter interval transects. The visibility of the natural ground surface was generally good. Project Archaeologist Andrew J. Garrison, M.A., RPA, prepared the technical report. Emily T. Soong created the graphics and Shawna M. Krystek conducted technical editing and report production. Qualifications of key personnel are provided in Appendix A.

2.1 Previous Work

The records search for the property was requested from the EIC at UCR. The records search did not identify any recorded resources within the subject property. However, the search did identify four resources within one mile of the subject property. The EIC records search also identified 40 previous studies conducted within one mile of the project. However, none of the previous studies included the subject property. In addition, BFSA reviewed the National Register of Historic Places (NRHP) index, historic USGS maps and data, Bureau of Land Management (BLM) General Land Office (GLO) Records, and historic aerial photographs (1953 through 2020) for the project area, which did not indicate the presence of any historic or prehistoric cultural resources within the project.

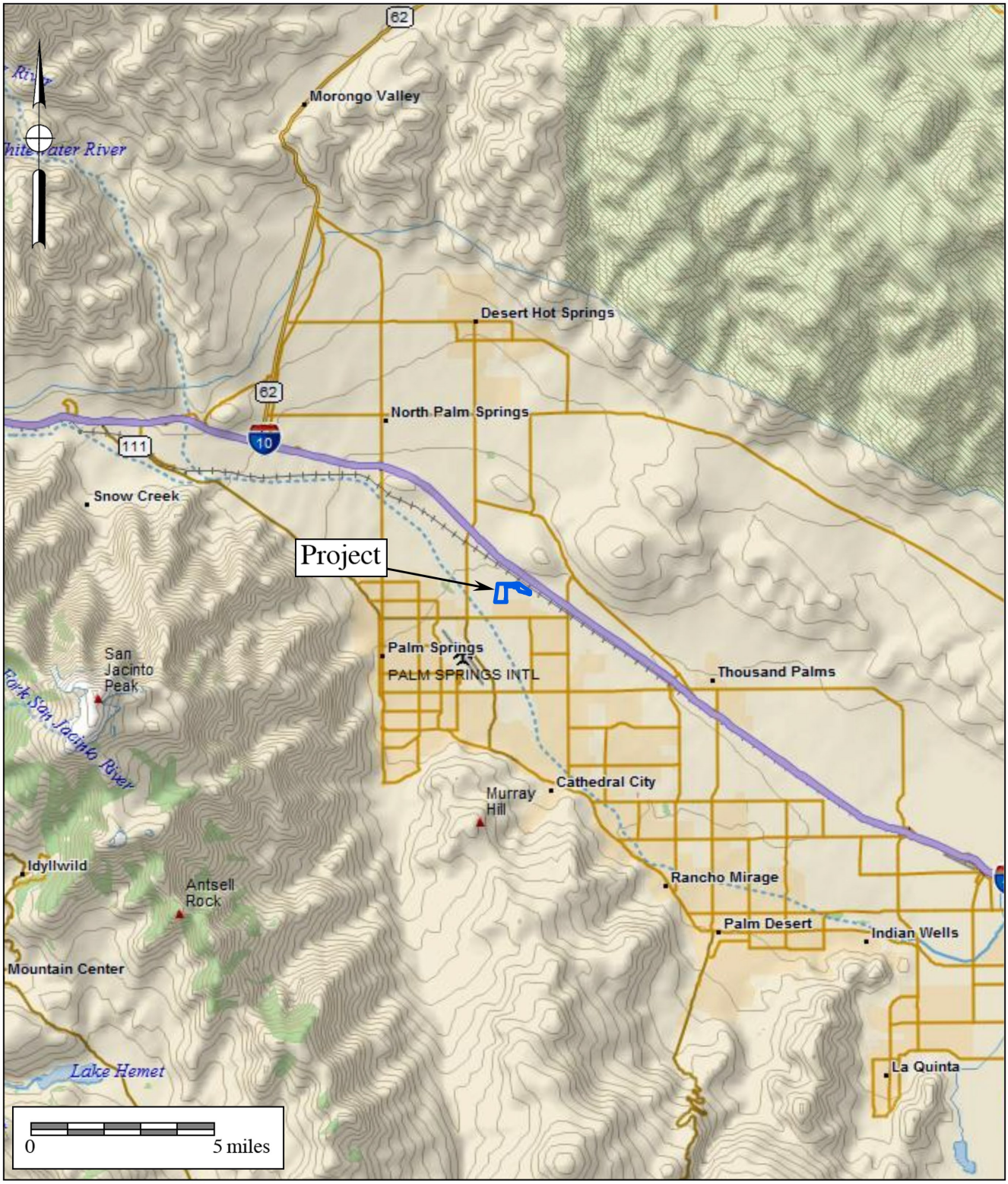

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Figure 1
General Location Map
The Verano Residential Project
DeLorme (1:250,000 series)

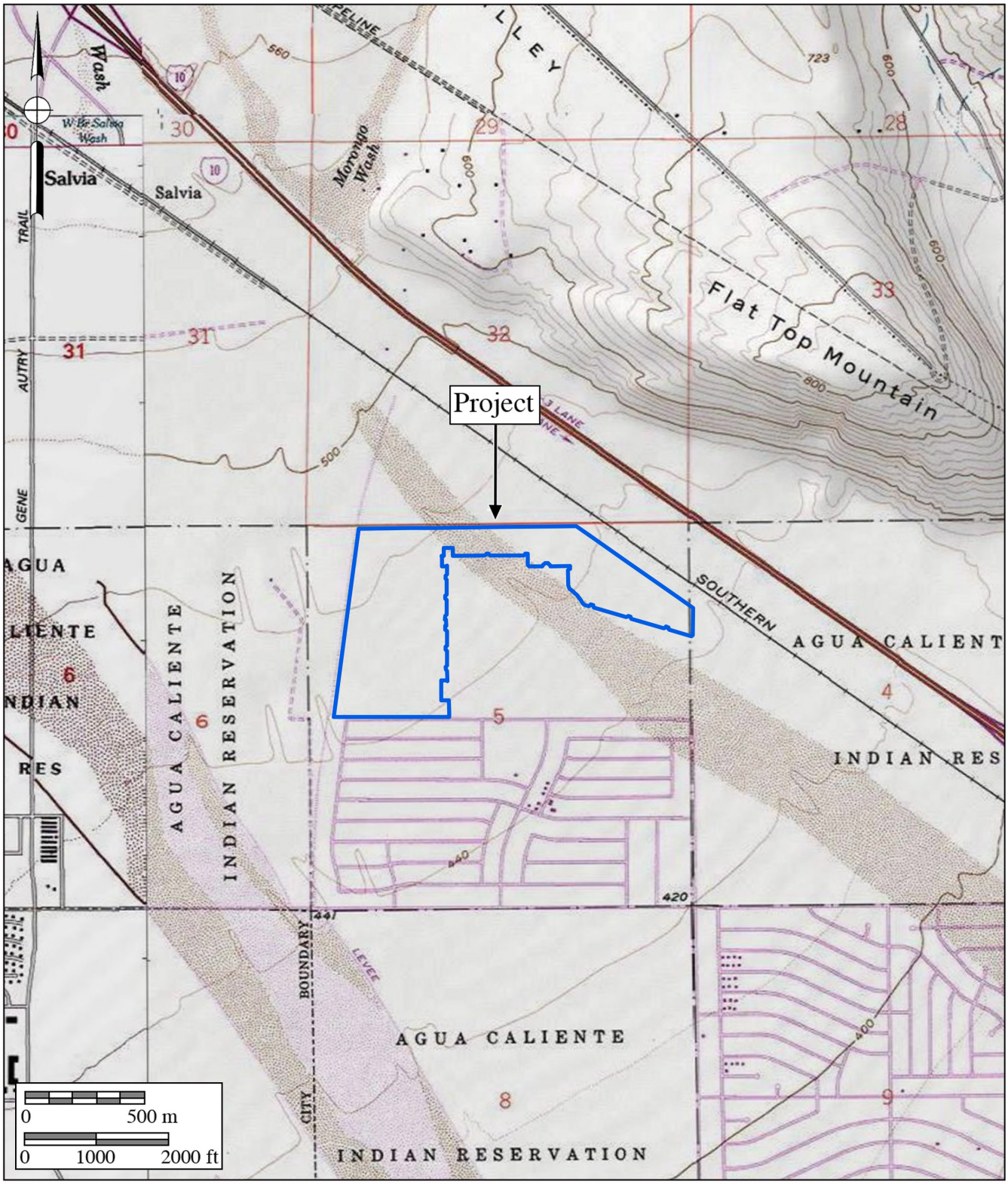

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Figure 2
Project Location Map
The Verano Residential Project
USGS *Cathedral City* Quadrangle (7.5-minute series)

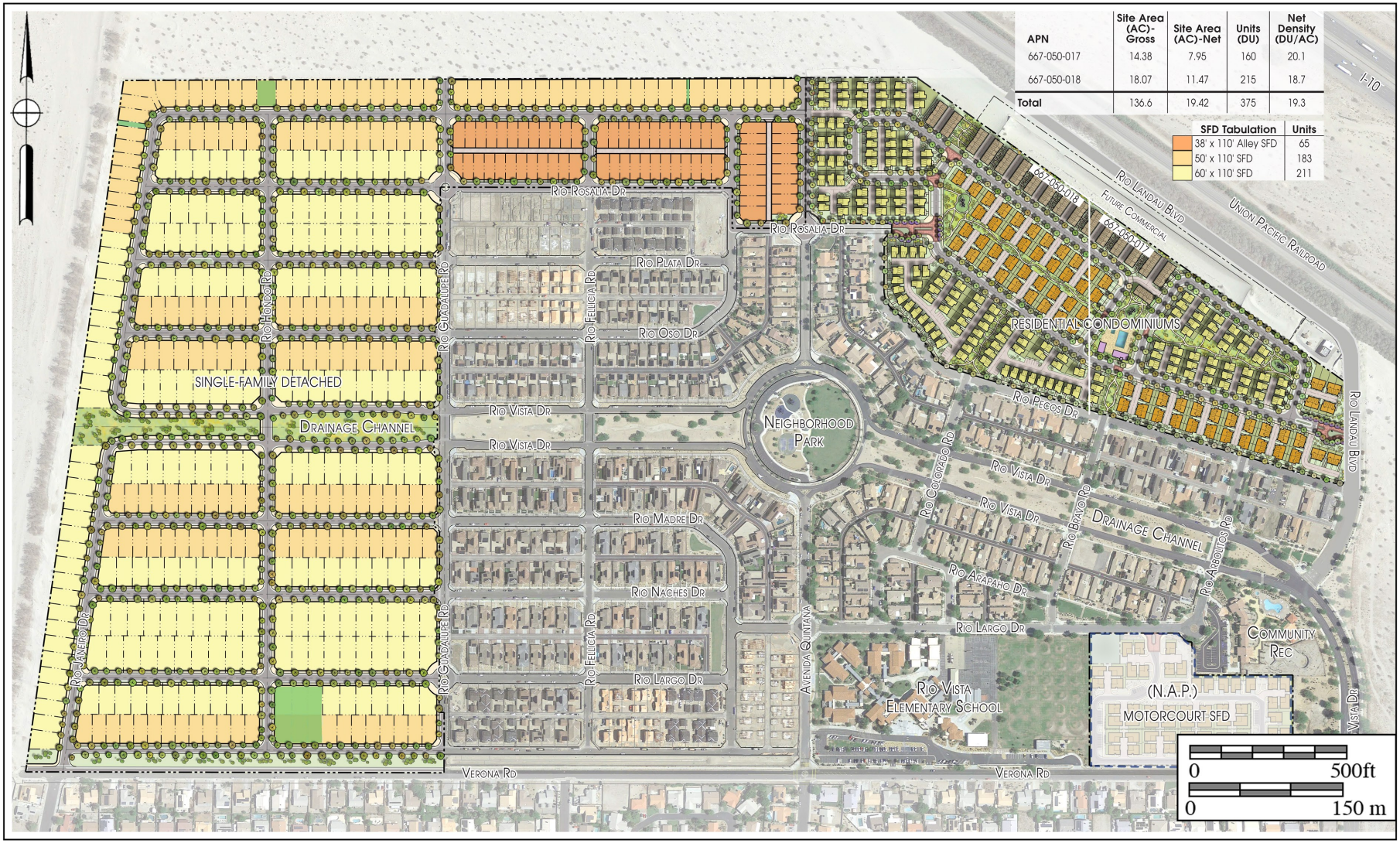

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Figure 3
Project Development Map
The Verano Residential Project

2.2 Project Setting

Regionally, the project lies within the Coachella Valley area of the the Salton Trough, a depressed structural block bounded on the west by the San Jacinto, Santa Rosa, and Coyote mountains and on the east by the San Andreas fault zone and Edom Hill, the Indio Hills, and the Mecca Hills (Norris and Webb 1990; Dibblee 2008). Based on mapping and descriptions by Rogers (1965) and Dibblee (2008), the project is within Holocene alluvium and/or dune sands. More precise mapping by Lancaster et al. (2012) indicates the geology at the surface of most of the project consists of late Holocene alluvial wash deposits, composed of unconsolidated sands and gravels deposited by recently active channels or streams. Portions of the project's western parcels are mapped as late Holocene eolian or sand dune deposits, composed of well sorted, wind-blown sand.

Currently the property partially consists of a series of previously graded pads and is generally flat with elevations ranging between approximately 445 feet above mean sea level (AMSL) and 450 feet AMSL. The vegetation found within the project consists primarily of creosote bushes, desert plants, and non-native weeds and grasses. Mammals within the region include mule deer, pronghorn antelopes, bighorn sheep, coyotes, bobcats, mountain lions, rabbits, hares, ground squirrels, kangaroo rats, and a variety of other small rodents and lizards. Birds within the region include raptors, quail, mourning doves, geese, ducks, heron, crows, finches, and sparrows.

The project is situated just east of the Whitewater River and just north of the boundaries of the ancient Lake Cahuilla which covered much of the Salton Trough. Ancient Lake Cahuilla was utilized by the prehistoric inhabitants. The lake has also been referred to as Lake LeConte, Agua Grande, and Blake Sea (Jertberg 1981; Wilke 1986). Based upon stratigraphic studies, complemented by radiocarbon (14C) dating, basin flooding and creation of an inland freshwater lake occurred several times during the latter half of the Holocene Epoch. Flooding of the area occurred multiple times during the late Pleistocene and early Holocene subsequent to the blockage of the natural drainage pattern to the Gulf of California by development of the Colorado River fan. The last versions of the lake existed as late as during the first half of the seventeenth century and during the middle of the eighteenth century (Ross 2020). Coarser-grained fluvial sediments are more prevalent along the basin margins, whereas finer-grained lacustrine sediments (silts and clays), derived from suspended Colorado River sediment, dominate the central areas of the basin. The thickness of Lake Cahuilla sediments ranges from only a few feet along its margins to as much as approximately 300 feet (90 meters) in deeper parts of the original basin (Norris and Webb 1990).

2.3 Cultural Setting – Archaeological Perspectives

The archaeological perspective seeks to reconstruct past cultures based upon the material remains left behind. This is done using a range of scientific methodologies, almost all of which draw from evolutionary theory as the base framework. Archaeology allows one to look deeper into history or prehistory to see where the beginnings of ideas manifest via analysis of material

culture, allowing for the understanding of outside forces that shape social change. Thus, the archaeological perspective allows one to better understand the consequences of the history of a given culture upon modern cultures. Archaeologists seek to understand the effects of past contexts of a given culture on *this* moment in time, not culture in context *in* the moment.

Despite this, a distinction exists between "emic" and "etic" ways of understanding material culture, prehistoric lifeways, and cultural phenomena in general (Harris 1991). While "emic" perspectives serve the subjective ways in which things are perceived and interpreted by the participants within a culture, "etic" perspectives are those of an outsider looking in hoping to attain a more scientific or "objective" understanding of the given phenomena. Archaeologists, by definition, will almost always serve an etic perspective as a result of the very nature of their work. As indicated by Laylander et al. (2014), it has sometimes been suggested that etic understanding, and therefore an archaeological understanding, is an imperfect and potentially ethnocentric attempt to arrive at emic understanding. In contrast to this, however, an etic understanding of material culture, cultural phenomena, and prehistoric lifeways can address significant dimensions of culture that lie entirely beyond the understanding or interest of those solely utilizing an emic perspective. As Harris (1991:20) appropriately points out, "Etic studies often involve the measurement and juxtaposition of activities and events that native informants find inappropriate or meaningless." This is also likely true of archaeological comparisons and juxtapositions of material culture. However, culture as a whole does not occur in a vacuum and is the result of several millennia of choices and consequences influencing everything from technology to religions, to institutions. Archaeology allows for the ability to not only see what came before, but to see how those choices, changes, and consequences affect the present. Where possible, archaeology should seek to address both emic and etic understandings to the extent that they may be recoverable from the archaeological record as manifestations of patterned human behavior (Laylander et al. 2014).

To that point, the culture history offered herein is primarily based upon archaeological (etic) and ethnographic (partially emic and partially etic) information. It is understood that the ethnographic record and early archaeological records were incompletely and imperfectly collected. In addition, in most cases, more than a century of intensive cultural change and cultural evolution had elapsed since the terminus of the prehistoric period. Coupled with the centuries and millennia of prehistoric change separating the "ethnographic present" from the prehistoric past, this has affected the emic and etic understandings of prehistoric cultural settings. Regardless, there remains a need to present the changing cultural setting within the region under investigation. As a result, both archaeological and Native American perspectives are offered when possible.

2.3.1 Introduction

Paleo Indian, Archaic Period Milling Stone Horizon, and the Late Prehistoric Takic groups are the three general cultural periods represented in Riverside County. The following discussion of the cultural history of Riverside County references the San Dieguito Complex, Encinitas Tradition, Milling Stone Horizon, La Jolla Complex, Pauma Complex, and San Luis Rey Complex,

since these culture sequences have been used to describe archaeological manifestations in the region. The Late Prehistoric component present in the Riverside County area was primarily represented by the Cahuilla, Gabrielino, and Luiseño Indians.

Absolute chronological information, where possible, will be incorporated into this archaeological discussion to examine the effectiveness of continuing to interchangeably use these terms. Reference will be made to the geological framework that divides the archaeologically-based culture chronology of the area into four segments: the late Pleistocene (20,000 to 10,000 years before the present [YBP]), the early Holocene (10,000 to 6,650 YBP), the middle Holocene (6,650 to 3,350 YBP), and the late Holocene (3,350 to 200 YBP).

2.3.2 Paleo Indian Period (Late Pleistocene: 11,500 to circa 9,000 YBP)

Archaeologically, the Paleo Indian Period is associated with the terminus of the late Pleistocene (12,000 to 10,000 YBP). The environment during the late Pleistocene was cool and moist, which allowed for glaciation in the mountains and the formation of deep, pluvial lakes in the deserts and basin lands (Moratto 1984). However, by the terminus of the late Pleistocene, the climate became warmer, which caused the glaciers to melt, sea levels to rise, greater coastal erosion, large lakes to recede and evaporate, extinction of Pleistocene megafauna, and major vegetation changes (Moratto 1984; Martin 1967, 1973; Fagan 1991). The coastal shoreline at 10,000 YBP, depending upon the particular area of the coast, was near the 30-meter isobath, or two to six kilometers further west than its present location (Masters 1983).

Paleo Indians were likely attracted to multiple habitat types, including mountains, marshlands, estuaries, and lakeshores. These people likely subsisted using a more generalized hunting, gathering, and collecting adaptation utilizing a variety of resources including birds, mollusks, and both large and small mammals (Erlandson and Colten 1991; Moratto 1984; Moss and Erlandson 1995).

2.3.3 Archaic Period (Early and Middle Holocene: circa 9,000 to 1,300 YBP)

Archaeological data indicates that between 9,000 and 8,000 YBP, a widespread complex was established in the southern California region, primarily along the coast (Warren and True 1961). This complex is locally known as the La Jolla Complex (Rogers 1939; Moriarty 1966), which is regionally associated with the Encinitas Tradition (Warren 1968) and shares cultural components with the widespread Milling Stone Horizon (Wallace 1955). The coastal expression of this complex appeared in southern California coastal areas and focused upon coastal resources and the development of deeply stratified shell middens that were primarily located around bays and lagoons. The older sites associated with this expression are located at Topanga Canyon, Newport Bay, Agua Hedionda Lagoon, and some of the Channel Islands. Radiocarbon dates from sites attributed to this complex span a period of over 7,000 years in this region, beginning over 9,000 YBP.

The Encinitas Tradition is best recognized for its pattern of large coastal sites characterized by shell middens, grinding tools that are closely associated with the marine resources of the area, cobble-based tools, and flexed human burials (Shumway et al. 1961; Smith and Moriarty 1985). While ground stone tools and scrapers are the most recognized tool types, coastal Encinitas Tradition sites also contain numerous utilized flakes, which may have been used to pry open shellfish. Artifact assemblages at coastal sites indicate a subsistence pattern focused upon shellfish collection and nearshore fishing. This suggests an incipient maritime adaptation with regional similarities to more northern sites of the same period (Koerper et al. 1986). Other artifacts associated with Encinitas Tradition sites include stone bowls, doughnut stones, discoidals, stone balls, and stone, bone, and shell beads.

The coastal lagoons in southern California supported large Milling Stone Horizon populations circa 6,000 YBP, as shown by numerous radiocarbon dates from the many sites adjacent to the lagoons. The ensuing millennia were not stable environmentally and, by 3,000 YBP, many of the coastal sites in central San Diego County had been abandoned (Gallegos 1987, 1992). The abandonment of the area is usually attributed to the sedimentation of coastal lagoons and the resulting deterioration of fish and mollusk habitat. This is a well-documented situation at Batiquitos Lagoon, where over a two-thousand-year period, dominant mollusk species occurring in archaeological middens shift from deep-water mollusks (*Argopecten* sp.) to species tolerant of tidal flat conditions (*Chione* sp.), indicating water depth and temperature changes (Miller 1966; Gallegos 1987).

This situation likely occurred for other small drainages (Buena Vista, Agua Hedionda, San Marcos, and Escondido creeks) along the central San Diego coast where low flow rates did not produce sufficient discharge to flush the lagoons they fed (Buena Vista, Agua Hedionda, Batiquitos, and San Elijo lagoons) (Byrd 1998). Drainages along the northern and southern San Diego coastline were larger and flushed the coastal hydrological features they fed, keeping them open to the ocean and allowing for continued human exploitation (Byrd 1998). Peñasquitos Lagoon exhibits dates as late as 2,355 YBP (Smith and Moriarty 1985) and San Diego Bay showed continuous occupation until the close of the Milling Stone Horizon (Gallegos and Kyle 1988). Additionally, data from several drainages in Camp Pendleton indicate a continued occupation of shell midden sites until the close of the period, indicating that coastal sites were not entirely abandoned during this time (Byrd 1998).

By 5,000 YBP, an inland expression of the La Jolla Complex is evident in the archaeological record, exhibiting influences from the Campbell Tradition from the north. These inland Milling Stone Horizon sites have been termed "Pauma Complex" (True 1958; Warren et al. 1961; Meighan 1954). By definition, Pauma Complex sites share a predominance of grinding implements (manos and metates), lack mollusk remains, have greater tool variety (including atlatl dart points, quarry-based tools, and crescentics), and seem to express a more sedentary lifestyle with a subsistence economy based upon the use of a broad variety of terrestrial resources. Although originally viewed as a separate culture from the coastal La Jolla Complex (True 1980),

it appears that these inland sites may be part of a subsistence and settlement system utilized by the coastal peoples. Evidence from the 4S Ranch Project in inland San Diego County suggests that these inland sites may represent seasonal components within an annual subsistence round by La Jolla Complex populations (Raven-Jennings et al. 1996). Including both coastal and inland sites of this time period in discussions of the Encinitas Tradition, therefore, provides a more complete appraisal of the settlement and subsistence system exhibited by this cultural complex.

More recent work by Sutton has identified a more localized complex known as the Greven Knoll Complex. The Greven Knoll Complex is a redefined northern inland expression of the Encinitas Tradition first put forth by Mark Sutton and Jill Gardener (2010). Sutton and Gardener (2010:25) state that "[t]he early millingstone archaeological record in the northern portion of the interior southern California was not formally named but was often referred to as 'Inland Millingstone,' 'Encinitas,' or even 'Topanga.'" Therefore, they proposed that all expressions of the inland Milling Stone in southern California north of San Diego County be grouped together in the Greven Knoll Complex.

The Greven Knoll Complex, as postulated by Sutton and Gardener (2010), is broken into three phases and obtained its name from the type-site Greven Knoll located in Yucaipa, California. Presently, the Greven Knoll Site is part of the Yukaipa't Site (SBR-1000) and was combined with the adjacent Simpson Site. Excavations at Greven Knoll recovered manos, metates, projectile points, discoidal cogged stones, and a flexed inhumation with a possible cremation (Kowta 1969:39). It is believed that the Greven Knoll Site was occupied between 5,000 and 3,500 YBP. The Simpson Site contained mortars, pestles, side-notched points, and stone and shell beads. Based upon the data recovered at these sites, Kowta (1969:39) suggested that "coastal Milling Stone Complexes extended to and interdigitated with the desert Pinto Basin Complex in the vicinity of the Cajon Pass."

Phase I of the Greven Knoll Complex is generally dominated by the presence of manos and metates, core tools, hammerstones, large dart points, flexed inhumations, and occasional cremations. Mortars and pestles are absent from this early phase, and the subsistence economy emphasized hunting. Sutton and Gardener (2010:26) propose that the similarity of the material culture of Greven Knoll Phase I and that found in the Mojave Desert at Pinto Period sites indicates that the Greven Knoll Complex was influenced by neighbors to the north at that time. Accordingly, Sutton and Gardener (2010) believe that Greven Knoll Phase I may have appeared as early as 9,400 YBP and lasted until about 4,000 YBP.

Greven Knoll Phase II is associated with a period between 4,000 and 3,000 YBP. Artifacts common to Greven Knoll Phase II include manos and metates, Elko points, core tools, and discoidals. Pestles and mortars are present; however, they are only represented in small numbers. Finally, there is an emphasis upon hunting and gathering for subsistence (Sutton and Gardener 2010:8).

Greven Knoll Phase III includes manos, metates, Elko points, scraper planes, choppers, hammerstones, and discoidals. Again, small numbers of mortars and pestles are present. Greven

Knoll Phase III spans from approximately 3,000 to 1,000 YBP and shows a reliance upon seeds and yucca. Hunting was still important, but bones seem to have been processed to obtain bone grease more often in this later phase (Sutton and Gardener 2010:8).

The shifts in food processing technologies during each of these phases indicate a change in subsistence strategies; although people were still hunting for large game, plant-based foods eventually became the primary dietary resource (Sutton 2011a). Sutton's (2011b) argument posits that the development of mortars and pestles during the middle Holocene can be attributed to the year-round exploitation of acorns as a main dietary provision. Additionally, the warmer and drier climate may have been responsible for groups from the east moving toward coastal populations, which is archaeologically represented by the interchange of coastal and eastern cultural traits (Sutton 2011a).

2.3.4 Late Prehistoric Period (Late Holocene: 1,300 YBP to 1790)

Many Luiseño hold the world view that, as a population, they were created in southern California. Archaeological and anthropological data, however, proposes a scientific/archaeological perspective suggesting that at approximately 1,350 YBP, Takic-speaking groups from the Great Basin region moved into Riverside County, marking the transition to the Late Prehistoric Period. An analysis of the Takic expansion by Sutton (2009) indicates that inland southern California was occupied by "proto-Yuman" populations before 1,000 YBP. The comprehensive, multi-phase model offered by Sutton (2009) employs linguistic, ethnographic, archaeological, and biological data to solidify a reasonable argument for population replacement of Takic groups to the north by Penutians (Laylander 1985). As a result, it is believed that Takic expansion occurred starting around 3,500 YBP moving toward southern California, with the Gabrielino language diffusing south into neighboring Yuman (Hokan) groups around 1,500 to 1,000 YBP, possibly resulting in the Luiseño dialect.

Based upon Sutton's model, the final Takic expansion would not have occurred until about 1,000 YBP, resulting in Vanyume, Serrano, Cahuilla, and Cupeño dialects. The model suggests that the Luiseño did not simply replace Hokan speakers but were rather a northern San Diego County/southern Riverside County Yuman population who adopted the Takic language. This period is characterized by higher population densities and elaborations in social, political, and technological systems. Economic systems diversified and intensified during this period with the continued elaboration of trade networks, the use of shell-bead currency, and the appearance of more labor-intensive, yet effective, technological innovations. Technological developments during this period included the introduction of the bow and arrow between A.D. 400 and 600 and the introduction of ceramics. Atlatl darts were replaced by smaller arrow darts, including Cottonwood series points. Other hallmarks of the Late Prehistoric Period include extensive trade networks as far-reaching as the Colorado River Basin and cremation of the dead.

2.3.5 Protohistoric Period (Late Holocene: 1790 to Present)

Ethnohistorical and ethnographic evidence indicates that three Shoshonean-speaking groups occupied portions of Riverside County during the Protohistoric period, including the Cahuilla, the Gabrielino, and the Luiseño. The geographic boundaries between these groups in pre- and proto-historic times are difficult to place.

The project itself is within the Coachella Valley. This region is known to be associated with numerous habitation sites of the Desert Cahuilla (Barrows 1900; Hooper 1920; Kroeber 1976; Curtis 1926; Strong 1929; Bean and Saubel 1972; Bean 1978). The Desert Cahuilla are identified as one of three distinct Cahuilla populations associated with the Coachella Valley. Wilke (1978) suggests the Cahuilla migrated into the upland areas after the last desiccation of Lake Cahuilla, and finally returned to the desert floor once the area began to grow again. The population that returned to the valley evolved into the Desert Cahuilla as indicated by ethnographic research.

Cahuilla: An Archaeological and Ethnographic Perspective

At the time of Spanish contact in the sixteenth century, the Cahuilla occupied territory that included the San Bernardino Mountains, Orocopia Mountain, and the Chocolate Mountains to the west, Salton Sea and Borrego Springs to the south, Palomar Mountain and Lake Mathews to the west, and the Santa Ana River to the north. The Cahuilla are a Takic-speaking people closely related to their Gabrielino and Luiseño neighbors, although relations with the Gabrielino were more intense than with the Luiseño. They differ from the Luiseño and Gabrielino in that their religion is more similar to the Mohave tribes of the eastern deserts than the Chingichngish religious group of the Luiseño and Gabrielino. The following is a summary of ethnographic data regarding this group (Bean 1978; Kroeber 1976).

Subsistence and Settlement

Cahuilla villages were typically permanent and located on low terraces within canyons in proximity to water sources. These locations proved to be rich in food resources and also afforded protection from prevailing winds. Villages had areas that were publicly owned and areas that were privately owned by clans, families, or individuals. Each village was associated with a particular lineage and series of sacred sites that included unique petroglyphs and pictographs. Villages were occupied throughout the year; however, during a several-week period in the fall, most of the village members relocated to mountain oak groves to take part in acorn harvesting (Bean 1978; Kroeber 1976).

The Cahuilla's use of plant resources is well documented. Plant foods harvested by the Cahuilla included valley oak acorns and single-leaf pinyon pine nuts. Other important plant species included bean and screw mesquite, agave, Mohave yucca, cacti, palm, chia, quail brush, yellowray goldfield, goosefoot, manzanita, catsclaw, desert lily, mariposa lily, and a number of other species such as grass seed. A number of agricultural domesticates were acquired from the Colorado River tribes including corn, bean, squash, and melon grown in limited amounts. Animal

species taken included deer, bighorn sheep, pronghorn antelope, rabbit, hare, rat, quail, dove, duck, roadrunner, and a variety of rodents, reptiles, fish, and insects (Bean 1978; Kroeber 1976).

Social Organization

The Cahuilla was not a political nation, but rather a cultural nationality with a common language. Two non-political, non-territorial patrimoieties were recognized: the Wildcats (túktem) and the Coyotes (?ístam). Lineage and kinship were memorized at a young age among the Cahuilla, providing a backdrop for political relationships. Clans were comprised of three to 10 lineages; each lineage owned a village site and specific resource areas. Lineages within a clan cooperated in subsistence activities, defense, and rituals (Bean 1978; Kroeber 1976).

A system of ceremonial hierarchy operated within each lineage. The hierarchy included the lineage leader, who was responsible for leading subsistence activities, guarding the sacred bundle, and negotiating with other lineage leaders in matters concerning land use, boundary disputes, marriage arrangements, trade, warfare, and ceremonies. The ceremonial assistant to the lineage leader was responsible for organizing ceremonies. A ceremonial singer possessed and performed songs at rituals and trained assistant singers. The shaman cured illnesses through supernatural powers, controlled natural phenomena, and was the guardian of ceremonies, keeping evil spirits away. The diviner was responsible for finding lost objects, telling future events, and locating game and other food resources. Doctors were usually older women who cured various ailments and illnesses with their knowledge of medicinal herbs. Finally, certain Cahuilla specialized as traders, who ranged as far west as Santa Catalina and as far east as the Gila River (Bean 1978; Kroeber 1976).

Marriages were arranged by parents from opposite moieties. When a child was born, an alliance formed between the families, which included frequent reciprocal exchanges. The Cahuilla kinship system extended to relatives within five generations. Important economic decisions, primarily the distribution of goods, operated within this kinship system (Bean 1978; Kroeber 1976).

Material Culture

Cahuilla houses were dome-shaped or rectangular, thatched structures. The home of the lineage leader was the largest, located near the ceremonial house with the best access to water. Other structures within the village included the men's sweathouse and granaries (Bean 1978; Kroeber 1976).

Cahuilla clothing, like other groups in the area, was minimal. Men typically wore a loincloth and sandals; women wore skirts made from mesquite bark, animal skin, or tules. Babies wore mesquite bark diapers. Rabbit skin cloaks were worn in cold weather (Bean 1978; Kroeber 1976).

Hunting implements included the bow and arrow, throwing sticks, and clubs. Grinding tools used in food processing included manos, metates, and wood mortars. The Cahuilla were

known to use long grinding implements made from wood to process mesquite beans; the mortar was typically a hollowed log buried in the ground. Other tools included steatite arrow shaft straighteners (Bean 1978; Kroeber 1976).

Baskets were made from rush, deer grass, and skunkbrush. Different species and leaves were chosen for different colors in the basket design. Coiled-ware baskets were either flat (for plates, trays, or winnowing), bowl-shaped (for food serving), deep, inverted, and cone-shaped (for transporting), or rounded and flat-bottomed for storing utensils and personal items (Bean 1978; Kroeber 1976).

Cahuilla pottery was made from thin, red-colored ceramic ware that was often painted and incised. Four basic vessel types are known for the Cahuilla: small-mouthed jars, cooking pots, bowls, and dishes. Additionally, smoking pipes and flutes were fashioned from ceramic (Bean 1978; Kroeber 1976).

Luiseño: An Archaeological and Ethnographic Perspective

When contacted by the Spanish in the sixteenth century, the Luiseño occupied a territory bounded on the west by the Pacific Ocean, on the east by the Peninsular Ranges mountains at San Jacinto (including Palomar Mountain to the south and Santiago Peak to the north), on the south by Agua Hedionda Lagoon, and on the north by Aliso Creek in present-day San Juan Capistrano. The Luiseño were a Takic-speaking people more closely related linguistically and ethnographically to the Cahuilla, Gabrielino, and Cupeño to the north and east rather than the Kumeyaay who occupied territory to the south. The Luiseño differed from their neighboring Takic speakers in having an extensive proliferation of social statuses, a system of ruling families that provided ethnic cohesion within the territory, a distinct worldview that stemmed from the use of datura (a hallucinogen), and an elaborate religion that included the creation of sacred sand paintings depicting the deity Chingichngish (Bean and Shipek 1978; Kroeber 1976).

Subsistence and Settlement

The Luiseño occupied sedentary villages most often located in sheltered areas in valley bottoms, along streams, or along coastal strands near mountain ranges. Villages were located near water sources to facilitate acorn leaching and in areas that offered thermal and defensive protection. Villages were comprised of areas that were publicly and privately (by family) owned. Publicly owned areas included trails, temporary campsites, hunting areas, and quarry sites. Inland groups had fishing and gathering sites along the coast that were intensively used from January to March when inland food resources were scarce. During October and November, most of the village would relocate to mountain oak groves to harvest acorns. The Luiseño remained at village sites for the remainder of the year, where food resources were within a day's travel (Bean and Shipek 1978; Kroeber 1976).

The most important food source for the Luiseño was the acorn, six different species of which were used (*Quercus californica, Quercus agrifolia, Quercus chrysolepis, Quercus dumosa,*

Quercus engelmannii, and *Quercus wislizenii*). Seeds, particularly of grasses, flowering plants, and mints, were also heavily exploited. Seed-bearing species were encouraged through controlled burns, which were conducted at least every third year. A variety of other stems, leaves, shoots, bulbs, roots, and fruits were also collected. Hunting augmented this vegetal diet. Animal species taken included deer, rabbit, hare, woodrat, ground squirrel, antelope, quail, duck, freshwater fish from mountain streams, marine mammals, and other sea creatures such as fish, crustaceans, and mollusks (particularly abalone, or *Haliotis* sp.). In addition, a variety of snakes, small birds, and rodents were eaten (Bean and Shipek 1978; Kroeber 1976).

Social Organization

Social groups within the Luiseño nation consisted of patrilinear families or clans, which were politically and economically autonomous. Several clans comprised a religious party, or nota, which was headed by a chief who organized ceremonies and controlled economics and warfare. The chief had assistants who specialized in particular aspects of ceremonial or environmental knowledge and who, with the chief, were part of a religion-based social group with special access to supernatural power, particularly that of Chingichngish. The positions of chief and assistants were hereditary, and the complexity and multiplicity of these specialists' roles likely increased in coastal and larger inland villages (Bean and Shipek 1978; Kroeber 1976; Strong 1929).

Marriages were arranged by the parents, often made to forge alliances between lineages. Useful alliances included those between groups of differing ecological niches and those that resulted in territorial expansion. Residence was patrilocal (Bean and Shipek 1978; Kroeber 1976). Women were primarily responsible for plant gathering and men principally hunted but, at times, particularly during acorn and marine mollusk harvests, there was no division of labor. Elderly women cared for children and elderly men participated in rituals, ceremonies, and political affairs. They were also responsible for manufacturing hunting and ritual implements. Children were taught subsistence skills at the earliest age possible (Bean and Shipek 1978; Kroeber 1976).

Material Culture

House structures were conical, partially subterranean, and thatched with reeds, brush, or bark. Ramadas were rectangular, protected workplaces for domestic chores such as cooking. Ceremonial sweathouses were important in purification rituals; these were round and partially subterranean thatched structures covered with a layer of mud. Another ceremonial structure was the wámkis (located in the center of the village, serving as the place of rituals), where sand paintings and other rituals associated with the Chingichngish religious group were performed (Bean and Shipek 1978; Kroeber 1976).

Clothing was minimal; women wore a cedar-bark and netted twine double apron and men wore a waist cord. In cold weather, cloaks or robes of rabbit fur, deerskin, or sea otter fur were worn by both sexes. Footwear included deerskin moccasins and sandals fashioned from yucca fibers. Adornments included bead necklaces and pendants made of bone, clay, stone, shell, bear

claw, mica, deer hooves, and abalone shell. Men wore ear and nose piercings made from cane or bone, which were sometimes decorated with beads. Other adornments were commonly decorated with semiprecious stones including quartz, topaz, garnet, opal, opalite, agate, and jasper (Bean and Shipek 1978; Kroeber 1976).

Hunting implements included the bow and arrow. Arrows were tipped with either a carved, fire-hardened wood tip or a lithic point, usually fashioned from locally available metavolcanic material or quartz. Throwing sticks fashioned from wood were used in hunting small game, while deer head decoys were used during deer hunts. Coastal groups fashioned dugout canoes for nearshore fishing and harvested fish with seines, nets, traps, and hooks made of bone or abalone shell (Bean and Shipek 1978; Kroeber 1976).

The Luiseño had a well-developed basket industry. Baskets were used in resource gathering, food preparation, storage, and food serving. Ceramic containers were shaped by paddle and anvil and fired in shallow, open pits to be used for food storage, cooking, and serving. Other utensils included wood implements, steatite bowls, and ground stone manos, metates, mortars, and pestles (Bean and Shipek 1978; Kroeber 1976). Additional tools such as knives, scrapers, choppers, awls, and drills were also used. Shamanistic items include soapstone or clay smoking pipes and crystals made of quartz or tourmaline (Bean and Shipek 1978; Kroeber 1976).

Gabrielino: An Archaeological and Ethnographic Perspective

The territory of the Gabrielino at the time of Spanish contact covers much of present-day Los Angeles and Orange counties. The southern extent of this culture area is bounded by Aliso Creek, the eastern extent is located east of present-day San Bernardino along the Santa Ana River, the northern extent includes the San Fernando Valley, and the western extent includes portions of the Santa Monica Mountains. The Gabrielino also occupied several Channel Islands including Santa Barbara Island, Santa Catalina Island, San Nicholas Island, and San Clemente Island. Because of their access to certain resources, including a steatite source from Santa Catalina Island, this group was among the wealthiest and most populous aboriginal groups in all of southern California. Trade of materials and resources controlled by the Gabrielino extended as far north as the San Joaquin Valley, as far east as the Colorado River, and as far south as Baja California (Bean and Smith 1978; Kroeber 1976).

Subsistence and Settlement

The Gabrielino lived in permanent villages and occupied smaller resource-gathering camps at various times of the year depending upon the seasonality of the resource. Larger villages were comprised of several families or clans, while smaller, seasonal camps typically housed smaller family units. The coastal area between San Pedro and Topanga Canyon was the location of primary subsistence villages, while secondary sites were located near inland sage stands, oak groves, and pine forests. Permanent villages were located along rivers and streams and in sheltered

areas along the coast. As previously mentioned, the Channel Islands were also the locations of relatively large settlements (Bean and Smith 1978; Kroeber 1976).

Resources procured along the coast and on the islands were primarily marine in nature and included tuna, swordfish, ray and shark, California sea lion, Stellar sea lion, harbor seal, northern elephant seal, sea otter, dolphin and porpoise, various waterfowl species, numerous fish species, purple sea urchin, and mollusks, such as rock scallop, California mussel, and limpet. Inland resources included oak acorn, pine nut, Mohave yucca, cacti, sage, grass nut, deer, rabbit, hare, rodent, quail, duck, and a variety of reptiles such as western pond turtle and numerous snake species (Bean and Smith 1978; Kroeber 1976).

Social Organization

Little is known about the social structure of the Gabrielino; however, there appears to have been at least three social classes: 1) the elite, which included the rich, chiefs, and their immediate family; 2) a middle class, which included people of relatively high economic status or long-established lineages; and 3) a class of people that included most other individuals in the society. Villages were politically autonomous units comprised of several lineages. During times of the year when certain seasonal resources were available, the village would divide into lineage groups and move out to exploit them, returning to the village between forays (Bean and Smith 1978; Kroeber 1976).

Each lineage had its own leader, with the village chief coming from the dominant lineage. Several villages might be allied under a paramount chief. Chiefly positions were of an ascribed status, most often passed to the eldest son. Chiefly duties included providing village cohesion, leading warfare and peace negotiations with other groups, collecting tribute from the village(s) under his jurisdiction, and arbitrating disputes within the village(s). The status of the chief was legitimized by his safekeeping of the sacred bundle, a representation of the link between the material and spiritual realms and the embodiment of power (Bean and Smith 1978; Kroeber 1976).

Shamans were leaders in the spirit realm. The duties of the shaman included conducting healing and curing ceremonies, guarding the sacred bundle, locating lost items, identifying and collecting poisons for arrows, and making rain (Bean and Smith 1978; Kroeber 1976).

Marriages were made between individuals of equal social status and, in the case of powerful lineages, marriages were arranged to establish political ties between the lineages (Bean and Smith 1978; Kroeber 1976).

Men conducted the majority of the heavy labor, hunting, fishing, and trading with other groups. Women's duties included gathering and preparing plant and animal resources, and making baskets, pots, and clothing (Bean and Smith 1978; Kroeber 1976).

Material Culture

Gabrielino houses were domed, circular structures made of thatched vegetation. Houses varied in size and could house from one to several families. Sweathouses (semicircular, earth-

covered buildings) were public structures used in male social ceremonies. Other structures included menstrual huts and a ceremonial structure called a yuvar, an open-air structure built near the chief's house (Bean and Smith 1978; Kroeber 1976).

Clothing was minimal; men and children most often went naked, while women wore deerskin or bark aprons. In cold weather, deerskin, rabbit fur, or bird skin (with feathers intact) cloaks were worn. Island and coastal groups used sea otter fur for cloaks. In areas of rough terrain, yucca fiber sandals were worn. Women often used red ochre on their faces and skin for adornment or protection from the sun. Adornment items included feathers, fur, shells, and beads (Bean and Smith 1978; Kroeber 1976).

Hunting implements included wood clubs, sinew-backed bows, slings, and throwing clubs. Maritime implements included rafts, harpoons, spears, hooks and line, and nets. A variety of other tools included deer scapulae saws, bone and shell needles, bone awls, scrapers, bone or shell flakers, wedges, stone knives and drills, metates, mullers, manos, shell spoons, bark platters, and wood paddles and bowls. Baskets were made from rush, deer grass, and skunkbush. Baskets were fashioned for hoppers, plates, trays, and winnowers for leaching, straining, and gathering. Baskets were also used for storing, preparing, and serving food, and for keeping personal and ceremonial items (Bean and Smith 1978; Kroeber 1976).

The Gabrielino had exclusive access to soapstone, or steatite, procured from Santa Catalina Island quarries. This highly prized material was used for making pipes, animal carvings, ritual objects, ornaments, and cooking utensils. The Gabrielino profited well from trading steatite since it was valued so much by groups throughout southern California (Bean and Smith 1978; Kroeber 1976).

2.3.6 Ethnohistoric Period (1769 to Present)

Traditionally, the history of the state of California has been divided into three general periods: the Spanish Period (1769 to 1821), the Mexican Period (1822 to 1846), and the American Period (1848 to present) (Caughey 1970). The American Period is often further subdivided into additional phases: the nineteenth century (1848 to 1900), the early twentieth century (1900 to 1950), and the Modern Period (1950 to present). From an archaeological standpoint, all of these phases can be referred to together as the Ethnohistoric Period. This provides a valuable tool for archaeologists, as ethnohistory is directly concerned with the study of indigenous or non-Western peoples from a combined historical/anthropological viewpoint, which employs written documents, oral narrative, material culture, and ethnographic data for analysis.

European exploration along the California coast began in 1542 with the landing of Juan Rodríguez Cabrillo and his men at San Diego Bay. Sixty years after the Cabrillo expeditions, an expedition under Sebastián Vizcaíno made an extensive and thorough exploration of the Pacific coast. Although the voyage did not extend beyond the northern limits of the Cabrillo track, Vizcaíno had the most lasting effect upon the nomenclature of the coast. Many of his place names have survived, whereas practically every one of the names created by Cabrillo have faded from

use. For instance, Cabrillo named the first (now) United States port he stopped at "San Miguel"; 60 years later, Vizcaíno changed it to "San Diego" (Rolle 1969). The early European voyages observed Native Americans living in villages along the coast but did not make any substantial, long-lasting impact. At the time of contact, the Luiseño population was estimated to have ranged from 4,000 to as many as 10,000 individuals (Bean and Shipek 1978; Kroeber 1976).

The historic background of the project area began with the Spanish colonization of Alta California. The first Spanish colonizing expedition reached southern California in 1769 with the intention of converting and civilizing the indigenous populations, as well as expanding the knowledge of and access to new resources in the region (Brigandi 1998). As a result, by the late eighteenth century, a large portion of southern California was overseen by Mission San Luis Rey (San Diego County), Mission San Juan Capistrano (Orange County), and Mission San Gabriel (Los Angeles County), which began colonization the region and surrounding areas (Chapman 1921).

Up until this time, the only known way to feasibly travel from Sonora to Alta California was by sea. In 1774, Juan Bautista de Anza, an army captain at Tubac, requested and was given permission by the governor of the Mexican State of Sonora to establish an overland route from Sonora to Monterey (Chapman 1921). In doing so, Juan Bautista de Anza passed through Riverside County and described the area in writing for the first time (Caughey 1970; Chapman 1921). In 1797, Father Fermín Lasuén (of Mission San Diego de Alcalá), Father Juan Norberto de Santiago, and Corporal Pedro Lisalde (of Mission San Juan Capistrano) led an expedition through southwestern Riverside County in search of a new mission site to establish a presence between San Diego and San Juan Capistrano (Engelhardt 1921). Their efforts ultimately resulted in the establishment of Mission San Luis Rey in Oceanside, California.

Each mission gained power through the support of a large, subjugated Native American workforce. As the missions grew, livestock holdings increased and became increasingly vulnerable to theft. In order to protect their interests, the southern California missions began to expand inland to try and provide additional security (Beattie and Beattie 1939; Caughey 1970). In order to meet their needs, the Spaniards embarked on a formal expedition in 1806 to find potential locations within what is now the San Bernardino Valley. As a result, by 1810, Father Francisco Dumetz of Mission San Gabriel had succeeded in establishing a religious site, or capilla, at a Cahuilla rancheria called Guachama (Beattie and Beattie 1939). San Bernardino Valley received its name from this site, which was dedicated to San Bernardino de Siena by Father Dumetz. The Guachama rancheria was located in present-day Bryn Mawr in San Bernardino County.

These early colonization efforts were followed by the establishment of estancias at Puente (circa 1816) and San Bernardino (circa 1819) near Guachama (Beattie and Beattie 1939). These efforts were soon mirrored by the Spaniards from Mission San Luis Rey who, in turn, established a presence in what is now Lake Elsinore, Temecula, and Murrieta (Chapman 1921). The indigenous groups who occupied these lands were recruited by missionaries, converted, and put to work in the missions (Pourade 1961). Throughout this period, the Native American populations

were decimated by introduced diseases, a drastic shift in diet resulting in poor nutrition, and social conflicts due to the introduction of an entirely new social order (Cook 1976).

Mexico achieved independence from Spain in 1822 and became a federal republic in 1824. As a result, both Baja and Alta California became classified as territories (Rolle 1969). Shortly thereafter, the Mexican Republic sought to grant large tracts of private land to its citizens to begin to encourage immigration to California and to establish its presence in the region. Part of the establishment of power and control included the desecularization of the missions circa 1832. These same missions were also located on some of the most fertile land in California and, as a result, were considered highly valuable. The resulting land grants, known as "ranchos," covered expansive portions of California and, by 1846, more than 600 land grants had been issued by the Mexican government. Rancho Jurupa was the first rancho to be established and was issued to Juan Bandini in 1838. Although Bandini primarily resided in San Diego, Rancho Jurupa was located in what is now Riverside County (Pourade 1963). A review of Riverside County place names quickly illustrates that many of the ranchos in Riverside County lent their names to present-day locations, including Jurupa, El Rincon, La Sierra, El Sobrante de San Jacinto, La Laguna (Lake Elsinore), Santa Rosa, Temecula, Pauba, San Jacinto Nuevo y Potrero, and San Jacinto Viejo (Gunther 1984). As was typical of many ranchos, these were all located in the valley environments within western Riverside County.

The treatment of Native Americans grew worse during the Rancho Period. Most of the Native Americans were forced off of their land or put to work on the now privately-owned ranchos, most often as slave labor. In light of the brutal ranchos, the degree to which Native Americans had become dependent upon the mission system is evident when, in 1838, a group of Native Americans from Mission San Luis Rey petitioned government officials in San Diego to relieve suffering at the hands of the rancheros:

> We have suffered incalculable losses, for some of which we are in part to be blamed for because many of us have abandoned the Mission … We plead and beseech you … to grant us a Rev. Father for this place. We have been accustomed to the Rev. Fathers and to their manner of managing the duties. We labored under their intelligent directions, and we were obedient to the Fathers according to the regulations, because we considered it as good for us. (Brigandi 1998:21)

Native American culture had been disrupted to the point where they could no longer rely upon prehistoric subsistence and social patterns. Not only does this illustrate how dependent the Native Americans had become upon the missionaries, but it also indicates a marked contrast in the way the Spanish treated the Native Americans compared to the Mexican and United States ranchers. Spanish colonialism (missions) is based upon utilizing human resources while integrating them into their society. The Mexican and American ranchers did not accept Native Americans into their social order and used them specifically for the extraction of labor, resources,

and profit. Rather than being incorporated, they were either subjugated or exterminated (Cook 1976).

By 1846, tensions between the United States and Mexico had escalated to the point of war (Rolle 1969). In order to reach a peaceful agreement, the Treaty of Guadalupe Hidalgo was put into effect in 1848, which resulted in the annexation of California to the United States. Once California opened to the United States, waves of settlers moved in searching for gold mines, business opportunities, political opportunities, religious freedom, and adventure (Rolle 1969; Caughey 1970). By 1850, California had become a state and was eventually divided into 27 separate counties. While a much larger population was now settling in California, this was primarily in the central valley, San Francisco, and the Gold Rush region of the Sierra Nevada mountain range (Rolle 1969; Caughey 1970). During this time, southern California grew at a much slower pace than northern California and was still dominated by the cattle industry that was established during the earlier rancho period. However, by 1859, the first United States Post Office in what would eventually become Riverside County was set up at John Magee's store on the Temecula Rancho (Gunther 1984).

During the same decade, circa 1852, the Native Americans of southern Riverside County, including the Luiseño and the Cahuilla, thought they had signed a treaty resulting in their ownership of all lands from Temecula to Aguanga east to the desert, including the San Jacinto Valley and the San Gorgonio Pass. The Temecula Treaty also included food and clothing provisions for the Native Americans. However, Congress never ratified these treaties, and the promise of one large reservation was rescinded (Brigandi 1998).

With the completion of the Southern Pacific Railroad in 1869, southern California saw its first major population expansion. The population boom continued circa 1874 with the completion of connections between the Southern Pacific Railroad in Sacramento to the transcontinental Central Pacific Railroad in Los Angeles (Rolle 1969; Caughey 1970). The population influx brought farmers, land speculators, and prospective developers to the region. As the Jurupa area became more and more populated, circa 1870, Judge John Wesley North and a group of associates founded the city of Riverside on part of the former rancho.

Although the first orange trees were planted in Riverside County circa 1871, it was not until a few years later when a small number of Brazilian navel orange trees were established that the citrus industry truly began in the region (Patterson 1971). The Brazilian navel orange was well suited to the climate of Riverside County and thrived with assistance from several extensive irrigation projects. At the close of 1882, an estimated half a million citrus trees were present in California. It is estimated that nearly half of that population was in Riverside County. Population growth and 1880s tax revenue from the booming citrus industry prompted the official formation of Riverside County in 1893 out of portions of what was once San Bernardino County (Patterson 1971).

Shortly thereafter, with the start of World War I, the United States began to develop a military presence in Riverside County with the construction of March Air Reserve Base. During

World War II, Camp Haan and Camp Anza were constructed near the city of Riverside. In the decades that followed, populations spread throughout the county into Lake Elsinore, Corona, Norco, Murrieta, and Wildomar (Patterson 1971). However, a significant portion of the county remained largely agricultural well into the 1970s. Following the 1970s, Riverside saw a period of dramatic population increase as the result of new development, more than doubling the population of the county to a population of over 1.3 million residents.

General History of the Cathedral City Area

The earliest residents of the Coachella Valley, where Cathedral City is located, were the Cahuilla Indians, who settled in the palm-lined mountain canyons around the valley in the summers and moved to thatched shelters near the mineral hot springs during the winters. The Cahuilla name for the region is "Sec-he," which means "boiling water," in reference to the mineral hot springs that are located in what is currently the Palm Springs business district, southwest of the project. In the early 1860s, the Bradshaw stagecoach line, Bradshaw Trail, passed through the region as it traveled between Banning, California, and the Arizona territories; during this time, the area was referred to as "Agua Caliente" (hot water). The Bradshaw Trail was the primary access route between Los Angels and Arizona until the Southern Pacific Railroad was completed in 1877. Today, Highway 111 closely follows the original Bradshaw Trail (Kaplan 2017).

Traditionally, farming was the dominant economic basis in the Coachella Valley, due in part to the development of groundwater resources. The "main agricultural staple in the Coachella Valley was the date palm, which was first introduced around the turn of the century. By the late 1910s, the date palm industry had firmly established itself" (City of Cathedral City 2009).

The City of Cathedral was founded in 1925 by John Grove, George Allen, Glenn Plumley, and M.V. Van Fleet. With its name derived from nearby Cathedral Canyon, the town was created to provide affordable housing and was often referred to as the "blue-collar neighbor" of Palm Springs. The 1927 upgrading of Highway 111 allowed for the construction of motels and restaurants along the highway effectively creating the city's downtown commercial district. During the 1930s, Cathedral City pulled visitors from Palm Springs when two gambling casinos, the Dune Club and 139 Club, were opened (City of Cathedral City 2009).

> The 1940s and the early 1950s marked a period of relatively rapid growth for Cathedral City. During World War II, the town served as a bedroom community to the military installations established in the vicinity as a part of the war effort. By the mid-l950s, residential development had expanded from the original townsite southward into the cove area, westward along Highway 111, and northward to the Ramon Road corridor. The rural northern portion of the planning area also saw significant growth in the early- and mid-1950s. In this area, five-acre parcels were patented by the U.S. government under the so-called "Baby Homestead Act," to

residents of the Los Angeles basin who were looking for weekend retreats in southern California's desert.

During the post-WWII era, Cathedral City and the other cities along Highway 111 became the fastest growing communities in the Coachella Valley, and began to play an increasingly important role in the regional economy. In 1981, Cathedral City was incorporated as the 18th city in Riverside County. With a population over 42,000, it is currently (2001) the third largest city in the Coachella Valley. (City of Cathedral City 2009)

2.4 Research Goals

The primary goal of the research design is to attempt to understand the way in which humans have used the land and resources within the project area through time, as well as to aid in the determination of resource significance. For the current project, the area under investigation is the central portion of Riverside County. The scope of work for the archaeological program conducted for the Verano Residential Project included the survey of the 128.34-acre property and off-site improvement areas. Given the area involved and the narrow focus of the cultural resources study, the research design for this project was necessarily limited and general in nature. Since the main objective of the investigation was to identify the presence of and potential impacts to cultural resources, the goal is not necessarily to answer wide-reaching theories regarding the development of early southern California, but to investigate the role and importance of the identified resources. Although survey-level investigations are limited in terms of the amount of information available, several specific research questions were developed that could be used to guide the initial investigations of any observed cultural resources. The following research questions take into account the size and location of the project.

Research Questions:

- Can located cultural resources be situated with a specific time period, population, or individual?
- Do the types of located cultural resources allow a site activity/function to be determined from a preliminary investigation? What are the site activities? What is the site function? What resources were exploited?
- How do the located sites compare to others reported from different surveys conducted in the area?
- How do the located sites fit existing models of settlement and subsistence for valley environments of the region?

Data Needs

At the survey level, the principal research objective is a generalized investigation of changing settlement patterns in both the prehistoric and historic periods within the study area. The overall goal is to understand settlement and resource procurement patterns of the project area occupants. Therefore, adequate information on site function, context, and chronology from an archaeological perspective is essential for the investigation. The fieldwork and archival research were undertaken with these primary research goals in mind:

1) To identify cultural resources occurring within the project;
2) To determine, if possible, site type and function, context of the deposit, and chronological placement of each cultural resource identified;
3) To place each cultural resource identified within a regional perspective; and
4) To provide recommendations for the treatment of each of the cultural resources identified.

2.5 Applicable Regulations

Resource importance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality illustrating or interpreting the heritage of Riverside County in history, architecture, archaeology, engineering, and culture. A number of criteria are used in demonstrating resource importance. Expressly, criteria outlined in CEQA provide the guidance for making such a determination. The following sections detail the specific CEQA criteria that a resource must meet in order to be determined important.

California Environmental Quality Act

According to CEQA (§ 15064.5a), the term "historical resource" includes the following:

1) A resource listed in, or determined to be eligible by the State Historical Resources Commission for listing in, the California Register of Historical Resources (CRHR) (Public Resources Code SS5024.1, Title 14 CCR [California Code of Regulations]. Section 4850 et seq.).
2) A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey, meeting the requirements of Section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3) Any object, building, structure, site, area, place, record, or manuscript, which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military,

or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CRHR (Public Resources Code SS5024.1, Title 14, Section 4852) including the following:

a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
b) Is associated with the lives of persons important in our past;
c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
d) Has yielded, or may be likely to yield, information important in prehistory or history.

4) The fact that a resource is not listed in, or determined eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to Section 5020.1[k] of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in Section 5024.1[g] of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code Section 5020.1(j) or 5024.1.

According to CEQA (§ 15064.5b), a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. CEQA defines a substantial adverse change as:

1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
2) The significance of an historical resource is materially impaired when a project:

a) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the CRHR; or
b) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of

Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or,

c) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for purposes of CEQA.

Section 15064.5(c) of CEQA applies to effects on archaeological sites and contains the following additional provisions regarding archaeological sites:

1) When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subsection (a).
2) If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the Public Resources Code, Section 15126.4 of the guidelines, and the limits contained in Section 21083.2 of the Public Resources Code do not apply.
3) If an archaeological site does not meet the criteria defined in subsection (a), but does meet the definition of a unique archaeological resource in Section 21083.2 of the Public Resources Code, the site shall be treated in accordance with the provisions of Section 21083.2. The time and cost limitations described in Public Resources Code Section 21083.2 (c-f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.
4) If an archaeological resource is neither a unique archaeological nor historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or EIR, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

Section 15064.5(d) and (e) contain additional provisions regarding human remains. Regarding Native American human remains, paragraph (d) provides:

(d) When an Initial Study identifies the existence of, or the probable likelihood, of Native American human remains within the project, a lead agency shall work with the appropriate Native Americans as identified by the NAHC as provided in Public Resources Code SS5097.98. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials with the appropriate Native Americans as identified by the NAHC. Action implementing such an agreement is exempt from:

1) The general prohibition on disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery (Health and Safety Code Section 7050.5).
2) The requirement of CEQA and the Coastal Act.

Local Guidelines – City of Cathedral City 2040 General Plan

The City of Cathedral City includes the following goal and policy related to cultural, historical, and archaeological resources in their General Plan (City of Cathedral City 2021).

Goal 1: Identification, preservation, and revitalization of significant cultural, historical, and archaeological resources that are valuable to the City of Cathedral City's heritage.

Policy 1: The City will ensure that sites in archaeologically and historically sensitive areas are surveyed prior to development.

In order to implement the above General Plan goal and policy, the General Plan Final Environmental Impact Report (City of Cathedral City 2021) includes the following Mitigation Measures:

Mitigation Measure CUL-4 Pre-Construction Surveys.
The City shall require intensive-level cultural resources surveys by qualified archaeologists, historians, and/or architectural historians, where deemed necessary and especially in areas of high sensitivity for cultural resources, as shown on Exhibit 2.6-1. Studies should include in-depth records search at the EIC, historic background research, intensive-level field survey, and consultation with the Cathedral City Historical Society, Native American representatives, and/or other relevant parties, as well as impact evaluation and mitigation programs, as needed. The City shall monitor and enforce recommended mitigation measures.

Mitigation Measure CUL-5 Archaeological and/or Tribal Resource Procurement and Documentation.
Should unknown archeological or tribal cultural resource materials become unearthed, the area of potential resources shall be cordoned off and protected from further disturbance until a qualified archeologist can investigate the discovery. The qualified archaeologist shall prepare a findings report summarizing the methods and results of the investigation, including an itemized inventory and detailed analysis of recovered artifacts upon completion of field and laboratory work. The report shall include an interpretation of the cultural activities represented by the

artifacts and a discussion of the significance of all archaeological or tribal finds. The submittal of the report to the City and Tribal representative, as appropriate, along with final curation of the recovered artifacts, will signify completion of the monitoring program and, barring unexpected findings of extraordinary significance, the mitigation of potential project impacts on cultural and tribal resources.

3.0 METHODOLOGY

The archaeological program for the Verano Residential Project consisted of institutional records searches, an intensive pedestrian survey of the project and off-site improvement areas by a qualified archaeologist, and preparation of this report. This archaeological study conformed to City of Cathedral City requirements and the statutory requirements of CEQA, Section 15064.5. Specific definitions for archaeological resource type(s) used in this report are those established by the State Historic Preservation Office (SHPO 1995).

3.1 Archaeological Records Search

The records search for the property was requested from the EIC at UCR. The records search results are discussed in Section 4.1. BFSA reviewed the NRHP index, historic USGS data, and historic aerial photographs. In addition, land patent records, held by the BLM and accessible through the BLM GLO website, were reviewed for pertinent project information, and the BFSA research library was consulted for any relevant historical information.

3.2 Field Methodology

The archaeological surveys of the project were conducted on June 5 and 6, 2023, and consisted of a series of parallel transects spaced at approximately 15-meter intervals covering the entire project and off-site areas. Photographs were taken to document project conditions during the surveys (see Section 4.2). Ground visibility throughout the property was generally good. Rodent spoil piles and patches of turned soil were closely inspected for evidence of subsurface archaeological materials.

3.3 Report Preparation and Recordation

This report contains statutory requirements for the project, a brief description of the setting, research methods employed, and the overall results of the survey. The report includes all appropriate illustrations and tabular information needed to make a complete and comprehensive presentation of these activities, including the methodologies employed and the personnel involved. A copy of the final technical report will be placed at the EIC at UCR. Any newly recorded sites or sites requiring updated information will be recorded on the appropriate Department of Parks and Recreation forms, which will be filed with the EIC.

3.4 Native American Consultation

BFSA requested a review of the SLF by the NAHC on June 6, 2023, to determine if any recorded Native American sacred sites or locations of religious or ceremonial importance are present within the project vicinity.

4.0 RESULTS

4.1 Records Search Results

An archaeological records search for the project and the surrounding area within a one-mile radius was requested from the EIC at UCR. The records search did not identify any recorded resources within the subject property. However, the search did identify four resources within one mile of the subject property (Table 4.1–1). The resources consist of a rock ring, a historic commercial building, a historic transmission line segment, and a historic isolate.

Table 4.1–1
Cultural Resources Recorded Within One Mile of the
Verano Residential Project

Site	Description
P- 33-002171	Isolated rock ring (temporal period not assigned)
P-33-006381	Historic commercial building
P-33-015035	Historic transmission line segment
P-33-024688	Historic isolate

The EIC records search also identified 40 previous studies conducted within one mile of the project. However, none of the previous studies included the subject property.

BFSA also reviewed the following sources to help facilitate a better understanding of the historical use of the property:

- The NRHP index
- BLM GLO records (patents and maps)
- Historic USGS maps
    - 1941 *Edorn* and 1958 *Thousand Palms* (15-minute) quadrangle maps
    - 1958, 1960, 1964, and 1973 *Cathedral City* (7.5-minute) quadrangle maps
- Historic aerial photographs (1953 through 2020)

No properties listed on the NRHP were identified within the subject property. The BLM GLO records list a 1905 patent for the property to the Southern Pacific Railroad Company. This was a large land grant encompassing 109,318.23 acres and the associated plat maps (1856 and 1914) do not show any potential historic features within the property. Likewise, the historic USGS maps and aerial photographs do not show any historic development within the property. Rather, the project appears as vacant desert land. Sometime between 1999 and 2002, the property appears to have been graded as graded pads are visible on the latter photograph.

BFSA also requested a SLF search from the NAHC. The NAHC SLF results were negative for any recorded Native American sacred sites or locations of religious or ceremonial importance within the project vicinity. All correspondence is provided in Appendix C.

4.2 Survey Results

Staff archaeologist Sabrina Corcoran conducted the archaeological surveys of the project on June 5 and 6, 2023. Vegetation across the landscape was dominated by creosote bushes and other desert plants as well as non-native weeds and grasses (Plates 4.2–1 and 4.2–2). The archaeological surveys of the property and off-site areas consisted of a series of parallel survey transects spaced at 15-meter intervals. Consistent with the aerial photographs, the survey found areas of the project had been previously impacted by clearing and grading. Evidence of grading was found throughout much of the project as pads, which were first visible on the 2002 aerial photograph, and were noted within the northwestern and norther portion of the project (Plate 4.2–3). Other noted impacts to the property included a large, pushed stockpile of soil in the western side of the property, pushed rocks throughout, metal and wood fencing bisecting and lining the property, a modern block wall located along the northern portion of the project, paved entry roads, and modern trash which had been dumped in multiple locations (Plates 4.2–4 through 4.2–6). The survey did not result in the identification of any historic or prehistoric cultural resources.

[redacted]

[redacted]

[redacted]

[redacted]

5.0 RECOMMENDATIONS

The Phase I archaeological assessment for the Verano Residential Project was negative for the presence of cultural resources. However, the pedestrian survey did find that the property has been previously cleared and disturbed. This is supported by evidence from aerial photographs illustrating grading on the property between 1996 and 2002. Although it appears areas of the project have previously been graded, the level of these impacts is not clear. This characterization of the property as surficially disturbed is relevant to the consideration of cultural resources being present within the project. When parcels are cleared, disked, or otherwise disturbed, evidence of surface artifact scatters is lost. Whether or not cultural resources have ever existed within this property, the current status of the area appears to have affected the potential to discover any surface scatters of artifacts.

Given the uncertainty of the level of prior impacts to the property coupled with the project's proximity to prehistorically available natural resources, such as the Whitewater River and ancient Lake Cahuilla, monitoring of grading is recommended. Consistent with the General Plan and the General Plan Final EIR, as a condition of approval, the project will implement a cultural resources monitoring program conducted by an archaeologist during the initial clearing and grading of the property (first three to five feet). The consulting archaeologist shall have the authority to modify and reduce the monitoring program to either periodic spot-checks or suspension of the monitoring program should the potential for cultural resources appear to be less than anticipated.

6.0 CERTIFICATION

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

Andrew J. Garrison — January 2, 2024

Andrew J. Garrison, M.A., RPA — Date
Project Archaeologist

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APPENDIX A

Qualifications of Key Personnel

Andrew J. Garrison, M.A., RPA

Project Archaeologist

BFSA Environmental Services, a Perennial Company
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: agarrison@bfsa.perennialenv.com

Education

Master of Arts, Public History, University of California, Riverside **2009**

Bachelor of Science, Anthropology, University of California, Riverside **2005**

Bachelor of Arts, History, University of California, Riverside **2005**

Professional Memberships

Register of Professional Archaeologists
Society for California Archaeology
Society for American Archaeology
California Council for the Promotion of History
Society of Primitive Technology
Lithic Studies Society
California Preservation Foundation
Pacific Coast Archaeological Society

Experience

Project Archaeologist **June 2017–Present**
BFSA Environmental Serives, A Perennial Company **Poway, California**

Project management of all phases of archaeological investigations for local, state, and federal agencies including National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) level projects interacting with clients, sub-consultants, and lead agencies. Supervise and perform fieldwork including archaeological survey, monitoring, site testing, comprehensive site records checks, and historic building assessments. Perform and oversee technological analysis of prehistoric lithic assemblages. Author or co-author cultural resource management reports submitted to private clients and lead agencies.

Senior Archaeologist and GIS Specialist **2009–2017**
Scientific Resource Surveys, Inc. **Orange, California**

Served as Project Archaeologist or Principal Investigator on multiple projects, including archaeological monitoring, cultural resource surveys, test excavations, and historic building assessments. Directed projects from start to finish, including budget and personnel hours proposals, field and laboratory direction, report writing, technical editing, Native American consultation, and final report submittal. Oversaw all GIS projects including data collection, spatial analysis, and map creation.

Preservation Researcher **2009**
City of Riverside Modernism Survey **Riverside, California**

Completed DPR Primary, District, and Building, Structure and Object Forms for five sites for a grant-funded project to survey designated modern architectural resources within the City of Riverside.

Information Officer **2005, 2008–2009**
Eastern Information Center (EIC), University of California, Riverside **Riverside, California**

Processed and catalogued restricted and unrestricted archaeological and historical site record forms. Conducted research projects and records searches for government agencies and private cultural resource firms.

Reports/Papers

2019 A Class III Archaeological Study for the Tuscany Valley (TM 33725) Project National Historic Preservation Act Section 106 Compliance, Lake Elsinore, Riverside County, California. Contributing author. Brian F. Smith and Associates, Inc.

2019 A Phase I and II Cultural Resources Assessment for the Jack Rabbit Trail Logistics Center Project, City of Beaumont, Riverside County, California. Brian F. Smith and Associates, Inc.

2019 A Phase I Cultural Resources Assessment for the 10575 Foothill Boulevard Project, Rancho Cucamonga, California. Brian F. Smith and Associates, Inc.

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2019 Phase II Cultural Resource Study for the McElwain Project, City of Murrieta, California. Contributing author. Brian F. Smith and Associates, Inc.

2019 A Section 106 (NHPA) Historic Resources Study for the McElwain Project, City of Murrieta, Riverside County, California. Brian F. Smith and Associates, Inc.

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2018 Phase I Cultural Resource Survey for the Stone Residence Project, 1525 Buckingham Drive, La Jolla, California 92037. Brian F. Smith and Associates, Inc.

2018 A Phase I Cultural Resources Assessment for the Seaton Commerce Center Project, Riverside County, California. Brian F. Smith and Associates, Inc.

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2017 A Phase I Cultural Resources Assessment for the Winchester Dollar General Store Project, Riverside County, California. Brian F. Smith and Associates, Inc.

2016 John Wayne Airport Jet Fuel Pipeline and Tank Farm Archaeological Monitoring Plan. Scientific Resource Surveys, Inc. On file at the County of Orange, California.

2016 Historic Resource Assessment for 220 South Batavia Street, Orange, CA 92868 Assessor's Parcel Number 041-064-4. Scientific Resource Surveys, Inc. Submitted to the City of Orange as part of Mills Act application.

2015 Historic Resource Report: 807-813 Harvard Boulevard, Los Angeles. Scientific Resource Surveys, Inc. On file at the South Central Coastal Information Center, California State University, Fullerton.

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2014 Archaeological Monitoring Results: The New Los Angeles Federal Courthouse. Scientific Resource Surveys, Inc. On file at the South Central Coastal Information Center, California State University, Fullerton.

2012 Bolsa Chica Archaeological Project Volume 7, Technological Analysis of Stone Tools, Lithic Technology at Bolsa Chica: Reduction Maintenance and Experimentation. Scientific Resource Surveys, Inc.

Presentations

2017 "Repair and Replace: Lithic Production Behavior as Indicated by the Debitage Assemblage from CA-MRP-283 the Hackney Site." Presented at the Society for California Archaeology Annual Meeting, Fish Camp, California.

2016 "Bones, Stones, and Shell at Bolsa Chica: A Ceremonial Relationship?" Presented at the Society for California Archaeology Annual Meeting, Ontario, California.

2016 "Markers of Time: Exploring Transitions in the Bolsa Chica Assemblage." Presented at the Society for California Archaeology Annual Meeting, Ontario, California.

2016 "Dating Duress: Understanding Prehistoric Climate Change at Bolsa Chica." Presented at the Society for California Archaeology Annual Meeting, Ontario, California.

2014 "New Discoveries from an Old Collection: Comparing Recently Identified OGR Beads to Those Previously Analyzed from the Encino Village Site." Presented at the Society for California Archaeology Annual Meeting, Visalia, California.

2012 Bolsa Chica Archaeology: Part Seven: Culture and Chronology. Lithic demonstration of experimental manufacturing techniques at the April meeting of The Pacific Coast Archaeological Society, Irvine, California.

APPENDIX B

Archaeological Records Search Results

(Deleted for Public Review; Bound Separately)

APPENDIX C

NAHC Sacred Lands File Search Results

(Deleted for Public Review; Bound Separately)

PRELIMINARY GEOTECHNICAL EXPLORATION – DUE DILIGENCE/UPDATE

PROPOSED RESIDENTIAL DEVELOPMENT – VERANO

CATHEDRAL CITY, CALIFORNIA

Prepared For

NCP VERANO, LLC
C/O NORTHLIGHT CAPITAL PARTNERS LLC
55 SAUGATUCK AVE., 1ST FLOOR
WESTPORT, CT 06880

Prepared By

LEIGHTON AND ASSOCIATES, INC.
41945 BOARDWALK, SUITE V
PALM DESERT, CA 92211

Project Number 13678.002

November 8, 2022

Leighton and Associates, Inc.
A Leighton Group Company

November 8, 2022

Project No. 13678.002

NCP Verano, LLC
c/o Northlight Capital Partners LLC
55 Saugatuck Ave., 1st Floor
Westport, CT 06880

Attention: Mr. Ben Gerig

Subject: Preliminary Geotechnical Exploration – Due Diligence/Update
Proposed Residential Development – Verano
Cathedral City, California

In accordance with your request and authorization, we are pleased to present herewith the results of our geotechnical exploration for the subject site located northwest of the intersection of Verano Road and Landau Boulevard, in the City of Cathedral City, California. This report summarizes our findings and conclusions and provides preliminary geotechnical recommendations for site development. Based on the results of this evaluation, the site appears suitable for the intended use provided our recommendations included herein are properly incorporated during design and construction phases of development. However, it should be noted that additional geotechnical evaluations or review might be needed as site development and/or grading plans become available.

If you have any questions regarding this report, please do not hesitate to contact the undersigned. We appreciate this opportunity to be of service on this project.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

Bashir S. Saiid, PE
Senior Project Engineer
Ext 8927 bsaiid@leightongroup.com

Robert F. Riha, CEG
President / Sr. Principal Geologist
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Distribution: (1) Addressee

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Appendices

1.0 INTRODUCTION

1.1 Purpose and Scope

This geotechnical report is for the proposed "Verano" project located in the city of Cathedral City, California (see Figure 1). Our scope of services for this exploration included the following:

- Review of provided previous geotechnical explorations (Sladden, 1999 and 2003) and other available geologic information and relevant publications listed in the references at the end of this report.
- A site geologic reconnaissance and visual observations of surface conditions.
- Excavation, sampling and logging of 7 exploratory geotechnical hollow stem auger borings throughout the site. Logs of test borings are presented in Appendix A.
- Laboratory testing of representative soil samples obtained from the subsurface exploration program. A brief description of laboratory testing procedures and laboratory test results are presented in Appendix B.
- Geotechnical engineering analyses performed or as directed by a California registered Professional Engineer (PE) including preliminary foundation and seismic design parameters based on the 2019 California Building Code (CBC). A California Certified Engineering Geologist (CEG) performed engineering geology review of site geologic hazards.
- Preparation of this report which presents the results of our exploration and provides preliminary geotechnical recommendations for the proposed residential development. It should be noted that geotechnical reviews and/or additional subsurface investigation and evaluation may be recommended based on future site development plans.

This report is not intended to be used as an environmental assessment (Phase I or other), and foundation and/or a rough grading plan review.

1.2 Site Location and Description

The project site is located on twelve (12) contiguous undeveloped parcels, totaling approximately 145-acres, located northwest of the intersection of Verano Road and Landau Boulevard, City of Cathedral City, California. The approximate limits of the site are shown on the Site Location Map, Figure 1. The property is bounded on the north and west by vacant land, Rio Vista Elementary School and existing

residences to the east, and Verona Road to the south. A perimeter wall exists along the northern boundary of the site. The Riverside County Assessor designates the site as Assessor Parcel Numbers (APNs) 677-050-015 through -018, -023, -027, -029, -031 thru -034, and -039.

Topographically, the site and surrounding area slopes to the south and southeast. Site elevations range from high point elevation of approximately 480 feet above mean sea level (msl) near the northwestern corner to a low point elevation of approximately 428 (msl) near the southeast corner of the property. The site is currently vacant with sand dune topography along the northern boundary.

1.3 Proposed Development

Plans for site development are not available at this time but are assumed herein to include typical single family detached homes with 1 to 2-story wood frame construction. The foundation loads are not expected to exceed 2,500 pounds per lineal foot (plf) for continuous footings.

We anticipate that site grading will include typical cut and fill grading to create level pads, access streets and 2:1 slopes. The maximum proposed cut and fill thickness is unknown at this time but we estimate it could be on the order of 5 to 15 feet. If site development significantly differs from the assumptions made herein, the recommendations included in this report should be subject to further review and evaluation.

2.0 FIELD EXPLORATION AND LABORATORY TESTING

2.1 Previous Studies

Based on our review of site-specific geotechnical reports (Sladden, 2003), partial rough-grading of the site started in October, 2001, and consisted of over-excavation of native surface soils and placement of engineering fill to construct present grade. Although no documentation was available for our review to confirm the extent of remedial grading, the project soils report (Sladden, 1999) recommended removal of 3 feet below existing grade or 2 feet below the bottom of footings, whichever is deeper. Remedial grading for pavement and exterior flatwork consisted of scarifying and/or removing the upper 12 inches and re-compacting to 90 percent relative compaction per ASTM 1557. Groundwater was not encountered within the explored depth of 50 feet and "the potential for liquefaction affecting the site is considered negligible." According to the project soils report, "the soils underlying the site consist primarily of fine-grained to coarse blown and alluvial sands." The expansion potential is expected to be very low.

2.2 Field Exploration

Our field exploration program consisted of 7 hollow-stem auger borings excavated at the approximate locations shown on the Boring Location Map (Figure 2). During excavation, bulk samples and relatively "undisturbed" Ring samples were collected from the exploration borings for further laboratory testing and evaluation. The relatively undisturbed samples were obtained utilizing a modified California drive sampler (2⅜-inch inside diameter and 3-inch outside diameter) driven 18 inches in general accordance with ASTM Test Method D3550. Standard penetration tests (SPT) were performed using a 2-inch outside diameter (1⅜-inch inside diameter) sampler driven 18 inches in general accordance with ASTM Test Method D1586. The number of blows to drive the samplers are recorded on the boring logs for each 6-inch increment (unless encountering refusal or >50 blows per 6 inches). Sampling was conducted by a staff geologist from our firm. After logging and sampling, the excavations were loosely backfilled with spoils generated during excavation. The logs of exploratory test borings are presented in Appendix A.

2.3 Laboratory Testing

Laboratory tests were performed on representative bulk and undisturbed drive samples to provide a basis for development of remedial earthwork and geotechnical design parameters. Selected samples were tested for the following

parameters: insitu moisture and density, maximum dry density (Proctor), R-Value, gradation, collapse, soluble sulfate, pH, resistivity and chloride content. The results of our laboratory testing are presented in Appendix B.

3.0 GEOTECHNICAL AND GEOLOGIC FINDINGS

3.1 Regional Geology

The site is located in the Coachella Valley in the Colorado Desert Geomorphic Province of California. The San Bernardino Mountains of the Transverse Ranges Geomorphic Province are to the north and the San Jacinto Mountains of the Peninsular Range are to the south. The dominant structural feature in this region is the active San Andreas transform system that consists of several major northwest-trending right lateral strike slip faults that extend through the San Gorgonio pass along the southern foothills of the San Bernardino Mountains, and along the northeast margin of the Coachella Valley. The San Andreas Fault Zone is composed of a series of fault zones of which the Garnet Hill and south branch of the San Andreas are located in the immediate site vicinity north of the site. Figure 3, Regional Geology Map, shows the region as unconsolidated Holocene sediments (alluvium and other deposits). The site itself is underlain by wind-blown (aeolian) sand deposits as well as alluvial soil eroded from the nearby mountains and deposited in the site vicinity.

3.2 Site Specific Geology

Based on the results of our field exploration and review of relevant geologic data for this area (see References), the site subsurface materials consist of dune sands over alluvium to the depths explored. These units are discussed in the following sections in order of increasing age and further described on the logs of geotechnical borings in Appendix A.

3.2.1 Artificial Fill (Map symbol Af)

Based on the soil types described in previous reports and our field exploration, artificial fill generally consisted of poorly-graded sand to silty sand with gravel/cobbles. It is estimated that the artificial fill generally extends to a depth varying of 5 to 6 feet below ground surface (BGS). Based on the results of our laboratory testing, these materials are expected to possess a very low expansion potential (EI<21).

3.2.2 Quaternary Alluvium (Map Symbol Qal)

Quaternary-aged alluvial deposits were encountered in all of our borings to the maximum depth explored. As encountered, the alluvium typically consists of light brown to brownish gray, medium dense to very dense, poorly-graded fine sand to silty sand. The alluvium is expected to generally possess very low expansion potential (EI<21).

3.3 Groundwater and Surface Water

Groundwater was not encountered in any of the borings and no standing water was observed on the ground surface during the time of the investigation. According to Department of water Resources, Southern District, Well 338628N1165236W001 (local well 9) located west of the site, groundwater depths may be between 250 and 335 feet below ground surface (bgs). Based on this data, it appears that shallow groundwater has not been present recently, or historically. As such, groundwater is not expected to be a constraint to development of the site. However, it should be noted that local perched water conditions may exist intermittently and may fluctuate seasonally, depending on rainfall and irrigation conditions. Surface runoff from the adjacent elevated portions of the site should be anticipated.

3.4 Faulting and Fissuring

This site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone or County of Riverside Fault Zone. No active, inactive fault traces or fissuring are known to traverse the planned development portions (Bryant and Hart 2007) and no evidence of onsite faulting was observed during our investigation. As defined by the California Geologic Survey, an active fault is one that has had surface displacement within the Holocene Epoch (roughly the last 11,000 years).

The closest known active fault zone is the San Gorgonio Pass-Garnet Hill Segment of the San Andreas Fault Zone. The San Gorgonio Pass-Garnet Hill Segment of the San Andreas Fault Zone is located approximately, 1.5 miles (2.4 km) northwest of the site (USGS, 2022). The San Gorgonio Pass-Garnet Hill Segment of the San Andreas Fault Zone is considered to be the source of the design earthquake.

3.5 Ground Shaking

Strong ground shaking can be expected at the site during moderate to severe earthquakes in this general region. This is common to virtually all of Southern California. Intensity of ground shaking at a given location depends primarily upon earthquake magnitude, site distance from the source, and site response (soil type) characteristics. Based on the 2019 California Building Code (CBC) and using the USGS Ground Motion Parameter Calculator, the seismic coefficients for this site are provided in the following table:

Table 1. 2019 CBC Site-Specific Seismic Coefficients

CBC Categorization/Coefficient		Design Value (g)
Site Longitude (-116.4834)	Site Latitude (33.8589)	
Site Class Definition	**D**	
Mapped Spectral Response Acceleration at 0.2s Period, S_S		2.29
Mapped Spectral Response Acceleration at 1s Period, S_1		0.97
Short Period Site Coefficient at 0.2s Period, F_a		**1.00**
Long Period Site Coefficient at 1s Period, F_v		**1.70**
Adjusted Spectral Response Acceleration at 0.2s Period, S_{MS}		2.29
Adjusted Spectral Response Acceleration at 1s Period, S_{M1}		1.65
Design Spectral Response Acceleration at 0.2s Period, S_{DS}		***1.53***
Design Spectral Response Acceleration at 1s Period, S_{D1}		***1.10***

* g- Gravity acceleration

The seismic coefficients for Site Class D follow Exception (2) in Section 11.4.8 of ASCE 7-16 that assumes a fundamental period of vibration less than 0.5s for the proposed structures. The project structural engineer should confirm such assumption or else a site–specific ground motion analysis will be required. Based on this analysis, the Peak Horizontal Ground Acceleration (PGA) is 0.98g and the site modified Peak Horizontal Ground Acceleration (PGAm) is 1.08g.

3.6 Dynamic Settlement (Liquefaction and Dry Settlement)

Liquefaction and dynamic settlement of cohesionless soils can be caused by strong vibratory motion due to earthquakes. Research and historical data indicate that loose granular soils below a near-surface groundwater table are most susceptible to liquefaction. Due to the absence of shallow groundwater, the liquefaction-induced settlement is considered very low on this site.

However, during a strong seismic event, seismically-induced settlement can still occur within loose to moderately dense, dry or saturated granular soils. Settlement caused by ground shaking is often non-uniformly distributed, which can result in differential settlement. Based on the proposed remedial grading recommendations in areas of planned development, the potential total settlement resulting from ground shaking is considered minimal or less than 1 inch in the upper 50 feet of soils.

3.7 Flooding

The site is not within a flood plain and potential for flooding is considered very low for this site.

3.8 Seiche and Tsunami

Due to the sites elevated location and lack of nearby open bodies of water, the possibility of the affects due to seiches or tsunami is considered nil.

3.9 Expansive/Collapsible Soils

Limited laboratory testing indicated that onsite soils possess a very low expansion potential (EI<21). Based on the remedial grading recommendations in areas of planned development, the potential impact due to collapsible soils, if they exist onsite, is considered nil.

3.10 Slope Stability and Landslides

Significant slopes are not located on or near the site. As such, slope instability is not considered an issue at this site. The site is not considered susceptible to seismically induced landslides.

4.0 SUMMARY OF FINDINGS AND CONCLUSIONS

Based on the results of this exploration, it is our opinion that the proposed development is feasible from a geotechnical/geologic standpoint. The following is a summary of the main geotechnical findings or factors that may affect development of the site.

- The depth of compacted fill appears to range from approximately 5 to 6 feet below existing pads elevation. The tested fill appears to be medium dense to dense based on the results of the field Standard Penetration Tests (SPTs).
- The existing onsite soils appear to be suitable for reuse as fill during proposed grading provided they are relatively free of organic material and debris.
- Undocumented fill soils, topsoil, and loose dune sand are considered to be potentially compressible. These materials should be removed and recompacted in areas of planned development.
- Based on our subsurface explorations, it is our opinion that the onsite earth materials in most areas can be excavated with heavy-duty conventional grading equipment in good working condition.
- Evidence of active faulting was not identified within the planned development area of the subject site. Strong ground shaking may occur at this site due to local earthquake activity.
- Perched groundwater was not encountered, however, may develop in areas of soils with contrasting permeabilities possibly resulting in saturated fills or seepage from slopes. This condition is often a result of individual homeowners' water use and irrigation practices.
- Based on preliminary laboratory results and field observations, onsite earth materials are expected to possess a very low expansion potential and negligible sulfate exposure to concrete. Additional testing should be performed during site grading to verify these observations.
- Cut slopes greater than 3 feet in height are recommended to be constructed as replacement fill slopes.
- Fill slopes are anticipated to be less than 20 feet in height and are expected to be grossly and surficially stable.
- Unprotected pads and slope faces will be susceptible to erosion. This risk can be reduced by planting the slopes as soon as possible after grading, and by maintaining proper erosion control measures

5.0 RECOMMENDATIONS

5.1 General

Based on the results of this preliminary exploration, it is our opinion that the subject site is suitable for the proposed development from a geotechnical viewpoint. Grading of the site should be in accordance with our recommendations included in this report and future recommendations based on additional site-specific development plans and evaluations made during construction by the geotechnical consultant.

5.2 Earthwork Considerations

Earthwork should be performed in accordance with the General Earthwork and Grading Specifications in Appendix C as well as the following recommendations. The recommendations contained in Appendix C, are general grading specifications provided for typical grading projects and some of the recommendations may not be strictly applicable to this project. The specific recommendations contained in the text of this report supersede the general recommendations in Appendix C.

The contract between the developer and earthwork contractor should be worded such that it is the responsibility of the contractor to place the fill properly in accordance with the recommendations of this report, and applicable County Grading Ordinances, notwithstanding the testing and observation of the geotechnical consultant during construction.

5.2.1 Site Preparation and Remedial Grading

Prior to grading, the proposed structural improvement areas (i.e. all structural fill areas, pavement areas, buildings, etc.) of the site should be cleared of surface and subsurface obstructions, heavy vegetation and boulders. Roots and debris should be disposed of offsite. Septic Tanks or seepage pits, if encountered, should be abandoned in accordance with the County of Riverside Department of Health Services guidelines.

The near surface soils (undocumented artificial fill, blown sand dunes, debris, etc.) are potentially compressible in their present state and may settle under the surcharge of fills or foundation loading. As such, these materials should be removed (over-excavated) and re-compacted in all settlement-sensitive areas in accordance with the criteria presented below. In addition, weathering of the surficial soils, local disturbance and vegetative growth has resulted in some surface loosening and drying. As such, the following is a summary of our recommendations:

- For the previously graded and partially graded pads ("Af", See Figure 2), we recommend that the upper 12 inches of surface soils within the building pad envelope (and 2 feet beyond all structural components) be removed. The removal bottom should then be thoroughly scarified 12-inches, moisture conditioned to near optimum moisture, and compacted to 90 percent relative compaction (ASTM D1557).
- For the previously non-graded areas ("Qa", See Figure 2), we recommend that the upper 3 feet of alluvium or 2 feet below bottom of footings, whichever is deeper, should be removed/over-excavated and recompacted prior to foundation construction or placement of any additional fill. This remedial grading may be reduced to the upper 2 feet of alluvium or 1 foot below soil subgrade for paved and hardscaped areas. The scarification, moisture conditioning and compaction should result in subgrade soils possessing near optimum moisture content and a minimum 90 percent relative density per ASTM D1557.

Acceptability of all removal bottoms should be reviewed by the geotechnical consultant and documented in the as-graded geotechnical report. The removal limit should be established by a 1:1 (horizontal: vertical) projection from the edge of fill soils supporting settlement-sensitive structures downward and outward to competent material identified by the geotechnical consultant. Removal will also include benching into competent material as the fills rise. Areas adjacent to existing structures or property limits may require special considerations and monitoring. Steeper temporary slopes in these areas may be considered.

5.2.2 Cut/Fill Transition Lots

In order to mitigate the impact of underlying cut/fill transition conditions, we recommend over-excavation of the cut portion of transition lots. Over-excavation should extend to a minimum depth of 3 feet below the bottom of the proposed footings or one-half of the maximum fill thickness on the lot, whichever is deeper (not to exceed 10 feet). This overexcavation does not include scarification or preprocessing prior to placement of fill.

5.2.3 Structural Fills

The onsite soils are generally suitable for re-use as compacted fill provided they are free of debris, organic matter and oversize rock. Areas to receive structural fill and/or other surface improvements should be scarified to a minimum depth of 8 inches, conditioned to at least optimum moisture content, and recompacted. Fill soils should be placed at a minimum of 90 percent relative compaction (based on ASTM D1557) and near or above optimum moisture content. Placement and compaction of fill should be performed in accordance with local grading ordinances under the observation and testing of the geotechnical consultant. The optimum lift thickness to produce a uniformly compacted fill will depend on the type and

size of compaction equipment used. In general, fill should be placed in uniform lifts not exceeding 8 inches in thickness and not contain rocks greater than 12-inches in maximum dimension.

Fill slope keyways will be necessary at the toe of all fill slopes and cut slope replacement fills. Keyway schematics, including dimensions and subdrain recommendations, are provided in Appendix D. All keyways should be excavated into dense bedrock or dense alluvium as determined by the geotechnical engineer. The cut portions of all slope and keyway excavations should be geologically mapped and approved by a geologist prior to fill placement.

Fills placed on slopes steeper than 5:1 (horizontal:vertical) should be benched into dense soils (see Appendix D for benching detail). Benching should be of sufficient depth to remove all loose material. A minimum bench height of 2 feet into approved material should be maintained at all times.

5.2.4 Shrinkage and Subsidence

The volume change of excavated onsite materials upon compaction is expected to vary with materials, volume of roots and deleterious materials, density, insitu moisture content, location, and compaction effort. The in-place and compacted densities of soil materials vary and accurate overall determination of shrinkage and bulking cannot be made. Therefore, we recommend site grading include, if possible, a balance area or ability to adjust import quantities to accommodate some variation. Based on our experience with similar materials, we anticipate 12 to 15 percent shrinkage in the upper 5 to 10 feet of dune sand/alluvium.

Subsidence due solely to scarification, moisture conditioning and recompaction of the exposed bottom of overexcavation, is expected to be on the order of 0.10 foot. This should be added to the above shrinkage value for the recompacted fill zone, to calculate overall recompaction subsidence.

5.2.5 Import Soils

Import soils and/or borrow sites, if needed, should be evaluated by the geotechnical consultant prior to import. Import soils should be uncontaminated, granular in nature, free of organic material (loss on ignition less-than 2 percent), have a very low expansion potential (with an Expansion Index less than 21) and have a low corrosion impact to the proposed improvements.

5.2.6 Utility Trenches

Utility trenches should be backfilled with compacted fill in accordance with Sections 306-1.2 and 306-1.3 of the Standard Specifications for Public

Works Construction, ("Greenbook"), 2021 Edition (or most recent). Fill material above the pipe zone should be placed in lifts not exceeding 8 inches in uncompacted thickness and should be compacted to at least 90 percent relative compaction (ASTM D 1557) by mechanical means only. Site soils may generally be suitable as trench backfill provided these soils are screened of rocks over 1½ inches in diameter and organic matter. If imported sand is used as backfill, the upper 3 feet in building and pavement areas should be compacted to 95 percent. The upper 6 inches of backfill in all pavement areas should be compacted to at least 95 percent relative compaction.

Where granular backfill is used in utility trenches adjacent moisture sensitive subgrades and foundation soils, we recommend that a cut-off "plug" of impermeable material be placed in these trenches at the perimeter of buildings, and at pavement edges adjacent to irrigated landscaped areas. A "plug" can consist of a 5-foot long section of clayey soils with more than 35-percent passing the No. 200 sieve, or a Controlled Low Strength Material (CLSM) consisting of one sack of Portland-cement plus one sack of bentonite per cubic-yard of sand. CLSM should generally conform to Section 201-6 of the Standard Specifications for Public Works Construction, ("Greenbook"), 2021 Edition. This is intended to reduce the likelihood of water permeating trenches from landscaped areas, then seeping along permeable trench backfill into the building and pavement subgrades, resulting in wetting of moisture sensitive subgrade earth materials under buildings and pavements.

Excavation of utility trenches should be performed in accordance with the project plans, specifications and the California Construction Safety Orders (Current Edition). The contractor should be responsible for providing a "competent person" as defined in Article 6 of the California Construction Safety Orders. Contractors should be advised that sandy soils (such as fills generated from the onsite alluvium) could make excavations particularly unsafe if all safety precautions are not properly implemented. In addition, excavations at or near the toe of slopes and/or parallel to slopes may be highly unstable due to the increased driving force and load on the trench wall. Spoil piles from the excavation(s) and construction equipment should be kept away from the sides of the trenches. Leighton does not consult in the area of safety engineering.

5.2.7 Drainage

All drainage should be directed away from structures, slopes and pavements by means of approved permanent/temporary drainage devices. Adequate storm drainage of any proposed pad should be provided to avoid wetting of foundation soils. Irrigation adjacent to buildings should be

avoided when possible. As an option, sealed-bottom planter boxes and/or drought resistant vegetation should be used within 5-feet of buildings.

5.2.8 Slope Design and Construction

Based on our understanding and planning purposes, all fill and cut slopes will be designed and constructed at 2:1 (horizontal:vertical). These slopes are considered grossly stable for static and pseudostatic conditions. For planning purposes, cut slopes exceeding 5 feet in height should be constructed as replacement fill slopes due to the highly erosive nature of site soils. Future grading plans should be subject to further review and evaluation.

The outer portion of fill slopes should be either overbuilt by 2 feet (minimum) and trimmed back to the finished slope configuration or compacted in vertical increments of 5 feet (maximum) by a weighted sheepsfoot roller as the fill is placed. The slope face should then be track-walked by dozers of appropriate weight to achieve the final slope configuration and compaction to the slope face.

Slope faces are inherently subject to erosion, particularly if exposed to wind, rainfall and irrigation. Landscaping and slope maintenance should be conducted as soon as possible in order to increase long-term surficial stability. Berms should be provided at the top of fill slopes. Drainage should be directed such that surface runoff on the slope face is minimized

5.3 Foundation Design

5.3.1 Bearing and Lateral Pressures

Based on our analysis, the proposed residential/ and retail/commercial structures may be founded on conventional foundation systems based on the design parameters provided below. The proposed foundations and slabs should be designed in accordance with the structural consultants' design, the minimum geotechnical recommendations presented herein, and the 2019 CBC. In utilizing the minimum geotechnical foundation recommendations, the structural consultant should design the foundation system to acceptable deflection criteria as determined by the architect. Foundation footings may be designed with the following geotechnical design parameters:

- Bearing Capacity: A net allowable bearing capacity of 2,000 pounds per square foot (psf), or a modulus of subgrade reaction of 150 pci may be used for design of footings founded entirely into compacted fill. The footings should extend a minimum of 12 inches below lowest adjacent grade. A minimum base width of 18 inches for continuous footings and a minimum bearing area of 3 square feet (1.75 ft by 1.75 ft) for pad

foundations should be used. Additionally, an increase of one-third may be applied when considering short-term live loads (e.g. seismic and wind).

- Passive Pressures: The passive earth pressure may be computed as an equivalent fluid having a density of 300 psf per foot of depth, to a maximum earth pressure of 3,000 pounds per square foot. A coefficient of friction between soil and concrete of 0.35 may be used with dead load forces. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third

The footing width, depth, reinforcement, slab reinforcement, and the slab-on-grade thickness should be designed by the structural consultant based on recommendations and soil characteristics indicated herein and the most recently adopted edition of the CBC.

5.3.2 Settlement

The project civil engineer, structural engineer, and architect should consider the potential effects of both static settlement and dynamic settlement presented below.

- Static Settlement**:** Most of the static settlement of onsite soils is expected to be immediate or within 30 days following fill placement. A differential static settlement of 0.5 inch over a 40-foot span may be considered for design purposes. Additional settlement will also occur in the future if sites grades are raised or due to specific or large footing/foundation loads.
- Dynamic Settlement: Based on our analysis, we estimate that total dynamic settlement is expected to be less than 1 inch. Differential settlement is expected to be minimal or less than 0.5 inches over a 40-foot horizontal span.

5.3.3 Vapor Retarder

It has been a standard of care to install a moisture retarder underneath all slabs where moisture condensation is undesirable. Moisture vapor retarders may retard but not totally eliminate moisture vapor movement from the underlying soils up through the slabs. Moisture vapor transmission may be additionally reduced by use of concrete additives. Leighton does not practice in the field of moisture vapor transmission evaluation/mitigation. Therefore, we recommend that a qualified person/firm be engaged/consulted with to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed construction. This person/firm should provide recommendations for mitigation of potential adverse impact of moisture vapor transmission on various components of the structure as deemed appropriate. The slab subgrade soils should be well wetted prior to placing concrete.

5.4 Retaining Walls

Retaining wall earth pressures are a function of the amount of wall yielding horizontally under load. If the wall can yield enough to mobilize full shear strength of backfill soils, then the wall can be designed for "active" pressure. If the wall cannot yield under the applied load, the shear strength of the soil cannot be mobilized and the earth pressure will be higher. Such walls should be designed for "at rest" conditions. If a structure moves toward the soils, the resulting resistance developed by the soil is the "passive" resistance. Retaining walls backfilled with non-expansive soils should be designed using the following equivalent fluid pressures:

Table 2. Retaining Wall Design Earth Pressures (Static, Drained)

Loading Conditions	Equivalent Fluid Density (pcf)	
	Level Backfill	2:1 Backfill
Active	35	50
At-Rest	50	80
Passive*	300	150 (2:1, sloping down)

* This assumes level condition in front of the wall will remain for the duration of the project, not to exceed 3,000 psf at depth. If sloping down (2:1) grades exist in front of walls, then they should be designed using passive values reduced to ½ of level backfill passive resistance values.

Unrestrained (yielding) cantilever walls should be designed for the active equivalent-fluid weight value provided above for very low to low expansive soils that are free draining. In the design of walls restrained from movement at the top (non-yielding) such as basement or elevator pit/utility vaults, the at-rest equivalent fluid weight value should be used. Total depth of retained earth for design of cantilever walls should be measured as the vertical distance below the ground surface measured at the wall face for stem design, or measured at the heel of the footing for overturning and sliding calculations. Should a sloping backfill other than a 2:1 (horizontal:vertical) be constructed above the wall (or a backfill is loaded by an adjacent surcharge load), the equivalent fluid weight values provided above should be re-evaluated on an individual case basis by us. Non-standard wall designs should also be reviewed by us prior to construction to check that the proper soil parameters have been incorporated into the wall design.

All retaining walls should be provided with appropriate drainage. The outlet pipe should be sloped to drain to a suitable outlet. Typical wall drainage design is illustrated in Appendix E, *Retaining Wall Backfill and Subdrain Detail*. Wall backfill should be non-expansive (EI ≤ 21) sands compacted by mechanical methods to a

minimum of 90 percent relative compaction (ASTM D 1557). Clayey site soils should not be used as wall backfill. Walls should not be backfilled until wall concrete attains the 28-day compressive strength and/or as determined by the Structural Engineer that the wall is structurally capable of supporting backfill. Lightweight compaction equipment should be used, unless otherwise approved by the Structural Engineer.

5.5 Geochemical Characteristics

Limited laboratory testing indicated a negligible concentration of soluble sulfates in onsite soils for representative samples. The laboratory test results are presented in Appendix B.

Additional corrosion testing should be performed on representative finish grade soils at the completion of rough grading. Concrete foundations in contact with site soils should be designed in accordance with 2019 CBC. A qualified corrosion engineer should be consulted to review the results of laboratory tests and coordinate additional testing if corrosion sensitive materials are to be used.

5.6 Preliminary Pavement Design Parameters

In order to provide the following recommendations, we have assumed an R-value of 74 based on our laboratory testing and the granular nature of the onsite soils and results of our laboratory testing. For the final pavement design, appropriate traffic indices should be selected by the project civil engineer or traffic engineering consultant and representative samples of actual subgrade materials should be tested for R-value.

Table 3. Preliminary Pavement Design

Street Type	Loading Conditions TI	*AC Pavement Section Thickness*	
		Asphaltic-Concrete (AC) Thickness (inch)	Aggregate Base (AB) Thickness (inch)
Parking Stalls	5	3.0	4.0
Local Street	6	3.0	6.0
Heavy Traffic Driveways/trucks	7	4.0	6.0

The subgrade soils in the upper 6 inches should be properly compacted to at least 95 percent relative compaction (ASTM D1557) and should be moisture-conditioned to near optimum and kept in this condition until the pavement section is constructed. Proof-rolling subgrade to identify localized areas of yielding

subgrade (if any) should be performed prior to placement of aggregate base and under the observation of the geotechnical consultant.

Minimum relative compaction requirements for aggregate base should be 95 percent of the maximum laboratory density as determined by ASTM D1557. Base rock should conform to the "Standard Specifications for Public Works Construction" (green book) current edition or Caltrans Class 2 aggregate base having a minimum R-value of 78. Asphaltic concrete should be placed on compacted aggregate base and compacted to a minimum 95 percent relative compaction

The preliminary pavement sections provided in this section are meant as minimum, if thinner or highly variable pavement sections are constructed, increased maintenance and repair may be needed.

6.0 GEOTECHNICAL CONSTRUCTION SERVICES

Geotechnical review is of paramount importance in engineering practice. Poor performances of many foundation and earthwork projects have been attributed to inadequate construction review. We recommend that Leighton be provided the opportunity to review the grading plan and foundation plan(s).

Reasonably-continuous construction observation and review during site grading and foundation installation allows for evaluation of the actual soil conditions and the ability to provide appropriate revisions where required during construction. Geotechnical conclusions and preliminary recommendations should be reviewed and verified by Leighton during construction, and revised accordingly if geotechnical conditions encountered vary from our findings and interpretations. Geotechnical observation and testing should be provided:

- After completion of site demolition and clearing,
- During ground preparation, fill slope key excavations, overexcavation of surface soils and subdrain placement as described herein,
- During compaction of all fill materials,
- After excavation of all footings, and prior to placement of concrete,
- During utility trench backfilling and compaction, and
- When any unusual conditions are encountered.

Additional geotechnical exploration and analysis may be required based on final development plans, for reasons such as significant changes in proposed structure locations/footprints. We should review grading (civil) and foundation (structural) plans, and comment further on geotechnical aspects of this project.

7.0 LIMITATIONS

This report was necessarily based in part upon data obtained from a limited number of observances, site visits, soil samples, tests, analyses, histories of occurrences, spaced subsurface explorations and limited information on historical events and observations. Such information is necessarily incomplete. The nature of many sites is such that differing characteristics can be experienced within small distances and under various climatic conditions. Changes in subsurface conditions can and do occur over time. This investigation was performed with the understanding that the subject site is proposed for residential and commercial development. The client is referred to Appendix D regarding important information provided by the Geoprofessional Business Association (GBA) on geotechnical engineering studies and reports and their applicability.

This report was prepared for NCP Verano, LLC, based on its needs, directions, and requirements at the time of our investigation. This report is not authorized for use by, and is not to be relied upon by any party except NCP Verano, LLC, and its successors and assigns as owner of the property, with whom Leighton and Associates, Inc. has contracted for the work. Use of or reliance on this report by any other party is at that party's risk. Unauthorized use of or reliance on this report constitutes an agreement to defend and indemnify Leighton and Associates, Inc. from and against any liability which may arise as a result of such use or reliance, regardless of any fault, negligence, or strict liability of Leighton and Associates, Inc.

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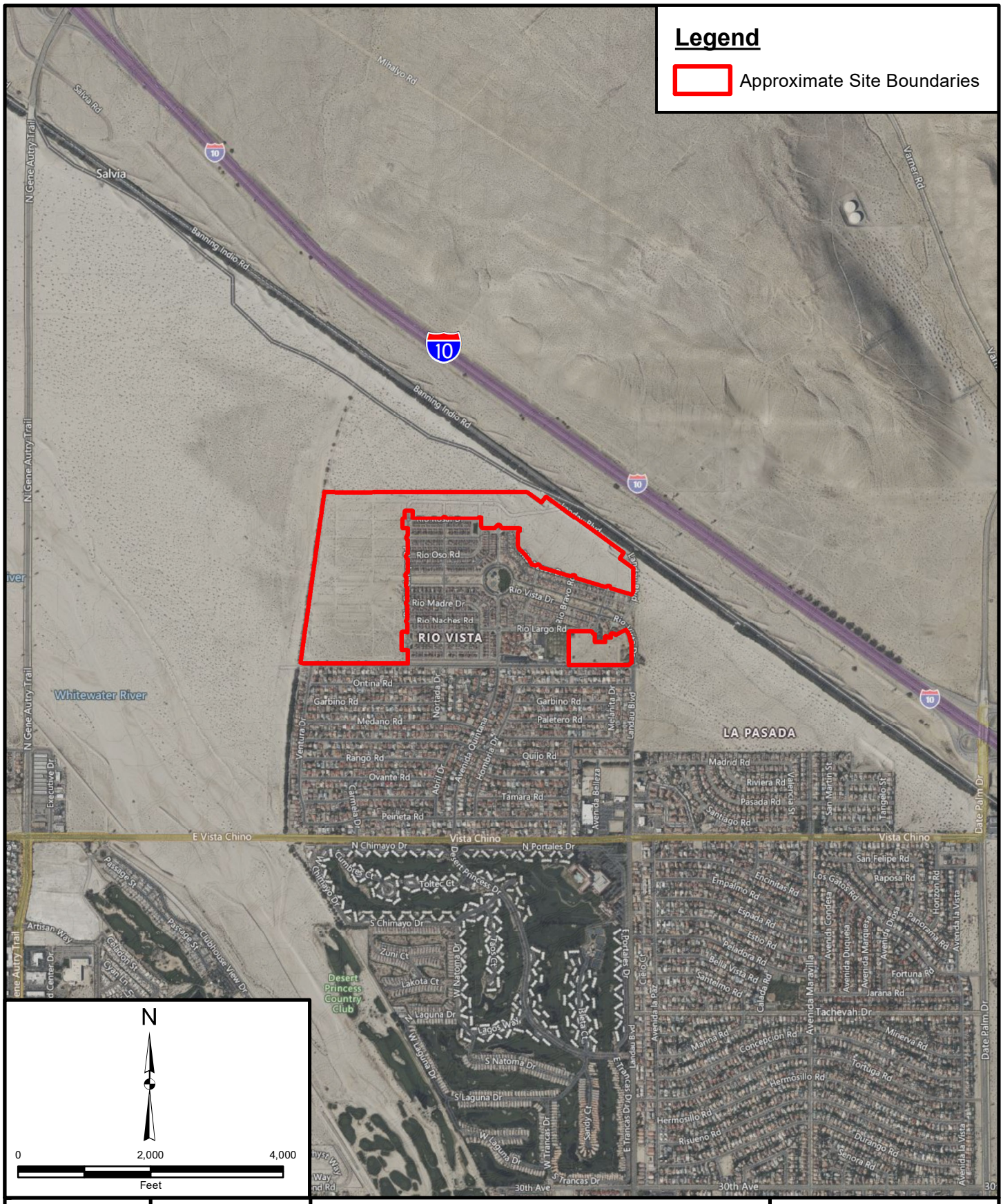


Project: 13678.002	Eng/Geol: BSS/RFR
Scale: 1 " = 2,000 '	Date: November 2022

Reference: © 2022 Microsoft Corporation © 2022 Maxar ©CNES (2022) Distribution Airbus

Author: (mmurphy)

SITE LOCATION MAP

Verano Recovery
Residential Development
Verano Road, Cathedral City, California

FIGURE 1

Leighton

Map Saved as V:\Drafting\13678\002\Maps\13678-002_F01_SLM_2022-10-28.mxd on 11/2/2022 11:12:04 AM

Legend

LB-7 — Approximate Location of Boring

Approximate Limit of Existing Artificial Fill

Approximate Site Boundaries

Geologic Units

Af — Artificial Fill (Sladden, 2001)

Qa — Quaternary Alluvium

Project: 13678.002	Eng/Geol: BSS/RFR
Scale: 1 " = 500 '	Date: November 2022
Base Map: Bing Maps, 2016 2022	
Author: (mmurphy)	

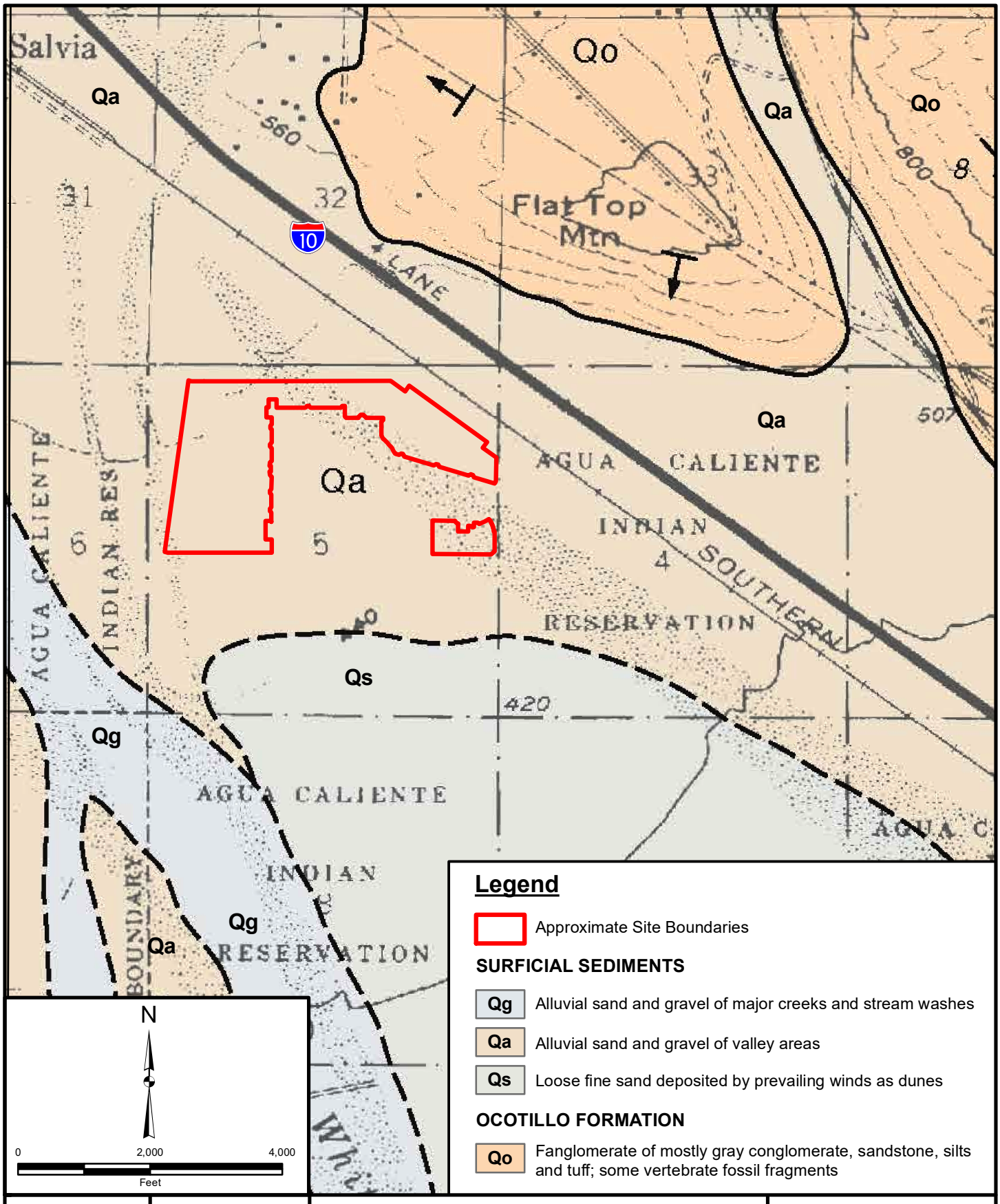
BORING LOCATION MAP

Verano Recovery
Residential Development
Verano Road, Cathedral City, California

FIGURE 2

Leighton

Map Saved as V:\Drafting\13678\002\Maps\13678-002_F02_BLM_2022-11-01.mxd on 11/8/2022 10:02:47 AM



Project: 13678.002	Eng/Geol: BSS/RFR
Scale: 1 " = 2,000 '	Date: November 2022

Base Map: Geologic Map of the Thousand Palms & Lost Horse Mountain 15 Minute Quadrangles by Thomas W. Dibblee Jr., 2006.

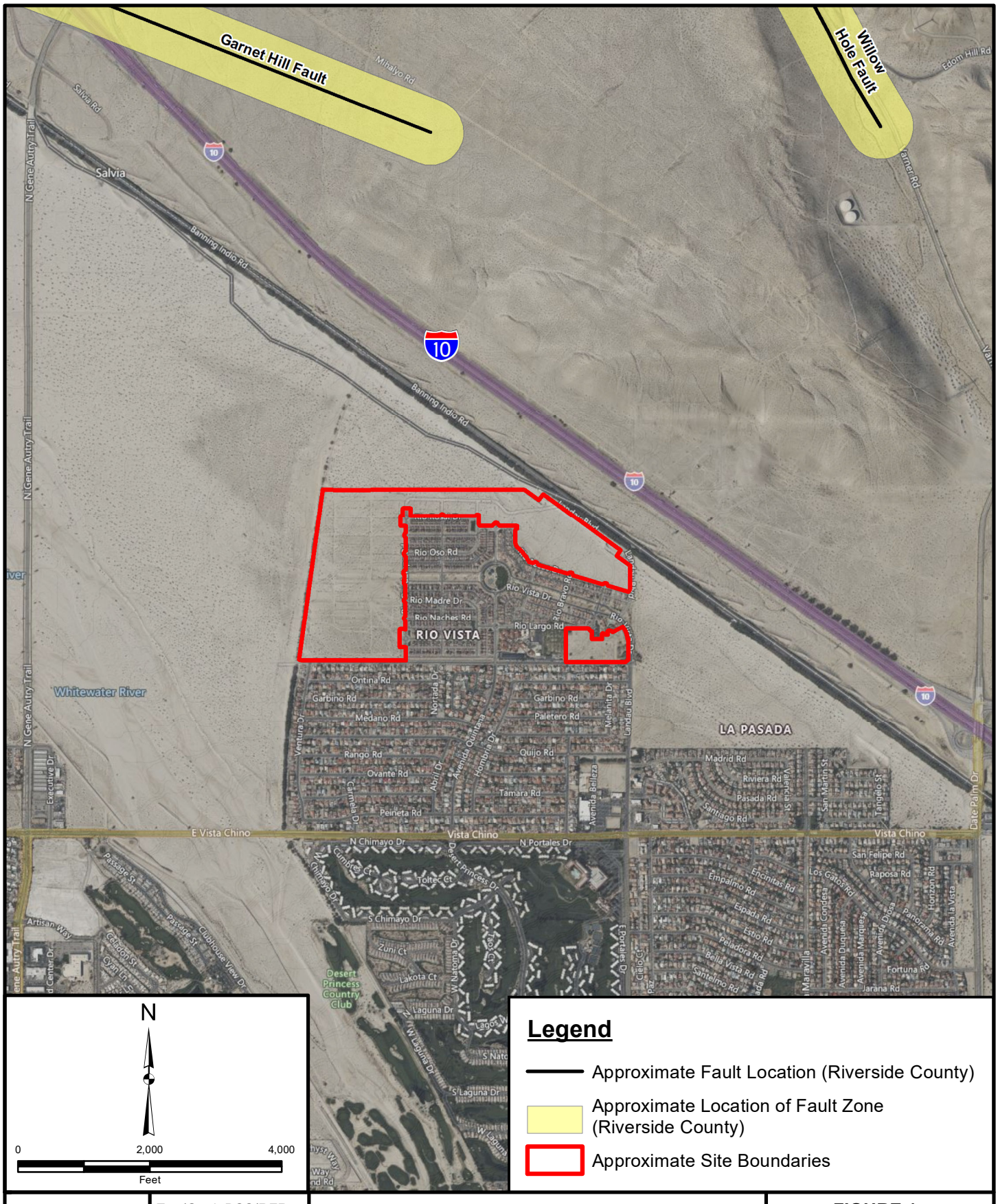
REGIONAL GEOLOGY MAP

Verano Recovery
Residential Development
Verano Road, Cathedral City, California

FIGURE 3

Leighton

Map Saved as V:\Drafting\13678\002\Maps\13678-002_F03_RGM_2022-11-01.mxd on 11/2/2022 12:12:56 PM



Legend

- Approximate Fault Location (Riverside County)
- Approximate Location of Fault Zone (Riverside County)
- Approximate Site Boundaries

Project: 13678.002	Eng/Geol: BSS/RFR
Scale: 1 " = 2,000 '	Date: November 2022

Base Map: © 2022 Microsoft Corporation © 2022 Maxar ©CNES (2022) Distribution Airbus Reference: Reference: Riverside County Mapping Portal, 9/9/2019.

REGIONAL FAULT MAP

Verano Recovery
Residential Development
Verano Road, Cathedral City, California

FIGURE 1

Leighton

Map Saved as V:\Drafting\13678\002\Maps\13678-002_F04_RFM_2022-11-01.mxd on 11/2/2022 12:29:03 PM

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APPENDIX A

FIELD EXPLORATION / **GEOTECHNICAL** BORINGS

GEOTECHNICAL BORING LOG LB-1

Project No.	13678.002	**Date Drilled**	10-12-22
Project	Urban West - Verano	**Logged By**	MJM
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	'
Location	See Boring Location Map	**Sampled By**	MJM

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0			B1				SW	**Quaternary Alluvium (Qal)** Well graded SAND, yellow, moist, fine to coarse sand, some gravel MD = 125.5 @ 6.0, FINES 10% GRAVEL 2%	MD, SA, CR
	5			R1	12 17 25	104	1		medium dense	
	10			R2	12 19 6	116	1		stiff, gray to yellow	
	15			R3	22 27 39	113	1	SM	SILTY SAND, dense, gray to yellow, moist, fine to coarse sand, some silt, smaller gravel > 4"	
	20			R4	50/6"				no recovery	
	25			R5	18 35 50/3"			GW	GRAVEL, dense, fine to coarse sand, 4 cm rock in sample	
	30									

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

GEOTECHNICAL BORING LOG LB-1

Project No.	13678.002	**Date Drilled**	10-12-22
Project	Urban West - Verano	**Logged By**	MJM
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	'
Location	See Boring Location Map	**Sampled By**	MJM

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S							*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
	30			R6	42 50/4"				no recovery	
	35			R7	32 50/5"	119	1	SW	Well graded gravelly SAND, dense, yellow to gray, dry, gravel up to 3 cm 20% gravel; -200 = 3	-200
	40			R8	42 50/3"				white to pale yellow, more gravel	
	45			R9	20 28 50/5"				yellow, moist	
	50			R10	20 27 50/4"			SP	Poorly graded SAND, yellow, moist, medium sand, few gravel Total Depth 51.4' No Groundwater Encountered Backfilled 10/12/2022	
	55									
	60									

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

GEOTECHNICAL BORING LOG LB-2

Project No.	13678.002	**Date Drilled**	10-12-22
Project	Urban West - Verano	**Logged By**	MJM
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	'
Location	See Boring Location Map	**Sampled By**	MJM

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0			B1				SM	**Artifical Fill (Af)** SILTY SAND, brown, moist, fine to medium sand, few gravel, some mica; RV = 24	RV
				R1	36 28 45	124	2		dense, few gravel	
	5			R2	23 50/6"	112	1		medium to coarse sand	
									Quaternary Alluvium (Qal)	
				R3	7 10 14	110	2	SM	SILTY SAND, medium dense, some mica	
	10			R4	9 10 13	105	2		medium dense, light brown, moist, fine to medium sand, less mica, some gravel (5%)	
	15			R5	9 12 16				same as above	
	20			R6	13 16 21				same as above	
									Total Depth 21.5' No Groundwater Encountered Backfilled 10/12/2022	
	25									
	30									

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

GEOTECHNICAL BORING LOG LB-3

Project No.	13678.002	**Date Drilled**	10-12-22
Project	Urban West - Verano	**Logged By**	MJM
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	'
Location	See Boring Location Map	**Sampled By**	MJM

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0			B1				SM	**Artificial Fill (Af)** SILTY SAND, yellowish brown, moist, fine to medium sand, some gravel; MD = 123.9 @ 8.2	MD
				R1	18 30 33	108	1		medium dense, fine to coarse sand	
	5			R2	18 12 21	111	1		clay lenses	
									Quaternary Alluvium (Qal)	
				R3	18 33 50/6"	114	1	SM	SILTY SAND with gravel, dense, yellowish brown, dry	
	10			R4	45 50/6"	112	1		dry, more gravel	
	15			R5	19 21 45				more gravel	
	20			R6	25 30 50/5"				same as above	
									Total Depth 21.5' No Groundwater Encountered Backfilled 10/12/2022	
	25									
	30									

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

GEOTECHNICAL BORING LOG LB-4

Project No.	13678.002	**Date Drilled**	10-12-22
Project	Urban West - Verano	**Logged By**	MJM
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	'
Location	See Boring Location Map	**Sampled By**	MJM

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0			R1	23 50/5"	100	0	SM	**Artificial Fill (Af)** SILTY SAND, dense, gray to yellow, moist, fine to medium sand, some mica	
	5			R2 B1	20 33 40	118	1		dense, fine to coarse sand, some gravel FINES 5% GRAVEL 2%	SA, CR
				R2	17 22 28			SM	**Quaternary Alluvium (Qal)** SILTY SAND, medium dense, pale brown to pale yellow, dry, fine to coarse sand, some gravel	
	10			R4	10 17 25				medium dense, pale brown to pale yellow, less gravel	
	15			R5	20 35 50				same as above	
									Total Depth 16.5' No Groundwater Encountered Backfilled 10/12/2022	
	20									
	25									
	30									

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG LB-5

Project No.	13678.002	**Date Drilled**	10-12-22
Project	Urban West - Verano	**Logged By**	MJM
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	'
Location	See Boring Location Map	**Sampled By**	MJM

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0			B1				SM	**Quaternary Alluvium (Qal)** SILTY SAND, yellow to gray, moist, fine to coarse sand, 10% gravel	
				R1	14 20 50	115	1		dense	
	5			R2	12 17 15	119	1		medium dense	
				R3	16 13 16	114	2		brown, fine to medium sand, mica	
	10			R4	10 15 13	116	1		yellow to gray, fine to coarse sand, gravelly	
	15			R5	10 7 10	108	3		loose, light brown, moist, fine to medium sand, some mica	
	20			R6	10 21 23				medium dense	
	25								Total Depth 21.5' No Groundwater Encountered Backfilled 10/12/2022	
	30									

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG LB-6

Project No.	13678.002	**Date Drilled**	10-12-22
Project	Urban West - Verano	**Logged By**	MJM
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	'
Location	See Boring Location Map	**Sampled By**	MJM

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0			B1				SM	**Quaternary Alluvium (Qal)**	
				R1	50/5"				no recovery	
	5			R2	11 14 16	106	1		SILTY SAND, medium dense, yellowish brown, moist, fine to medium sand, mica, >5% gravel	
				R3	7 7 12				no recovery	
	10			R4	9 18 28				20% gravel	
	15			R5	17 23 27	119	1		dense, yellow to gray, no gravel	
									Total Depth 16.5' No Groundwater Encountered Backfilled 10/12/2022	
	20									
	25									
	30									

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG LB-7

Project No.	13678.002	**Date Drilled**	10-12-22
Project	Urban West - Verano	**Logged By**	MJM
Drilling Co.	2R Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	'
Location	See Boring Location Map	**Sampled By**	MJM

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0			B1				SM	**Quaternary Alluvium (Qal)** SILTY SAND, light brown, moist, fine to medium sand, no gravel EI = 0	EI
				R1	9 16 11	106	1		same as above	
	5			R2	7 11 16	107	1		same as above, lots of coarse grains	
				R3	10 13 23				same as above, 5% gravel -200 = 11	-200
	10			R4	16 13 21	105	1		same as above, no gravel	
	15			R5	9 14 22	106	1		same as above	
	20			R6	18 21 24				same as above, clay lenses	
									Total Depth 21.5' No Groundwater Encountered Backfilled 10/12/2022	
	25									
	30									

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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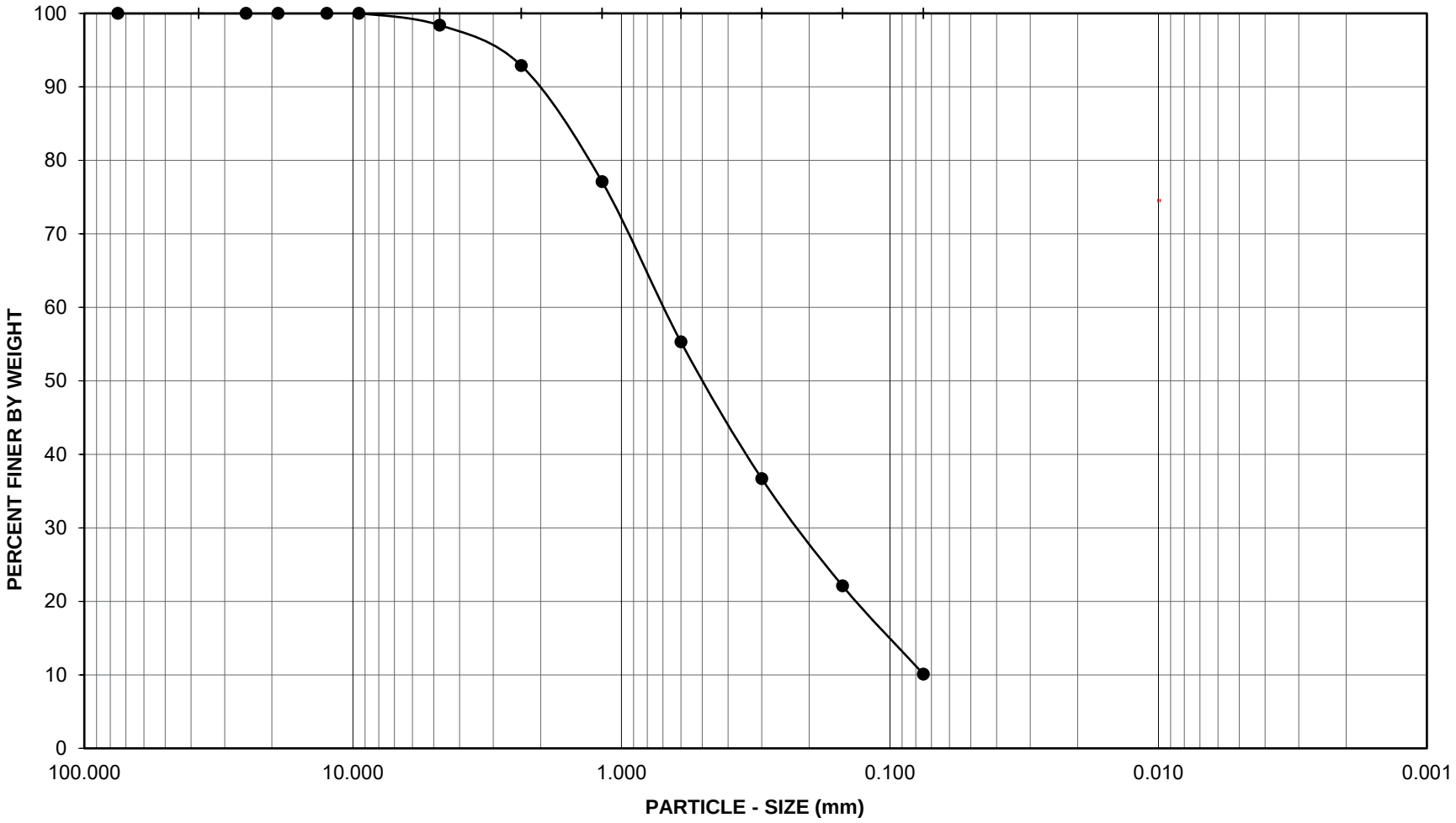
APPENDIX B

RESULTS OF GEOTECHNICAL LABORATORY TESTING

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING — U.S. STANDARD SIEVE NUMBER — HYDROMETER

3.0" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200



Project Name: Verano DD/Update

Project No.: 13678.002

Boring No.: LB-1 Sample No.: B-1

Depth (feet): 0 - 5.0 Soil Type : SW-SM

Soil Identification: Well-Graded Sand with Silt (SW-SM), Grayish Brown.

GR:SA:FI : (%) 2 : 88 : 10

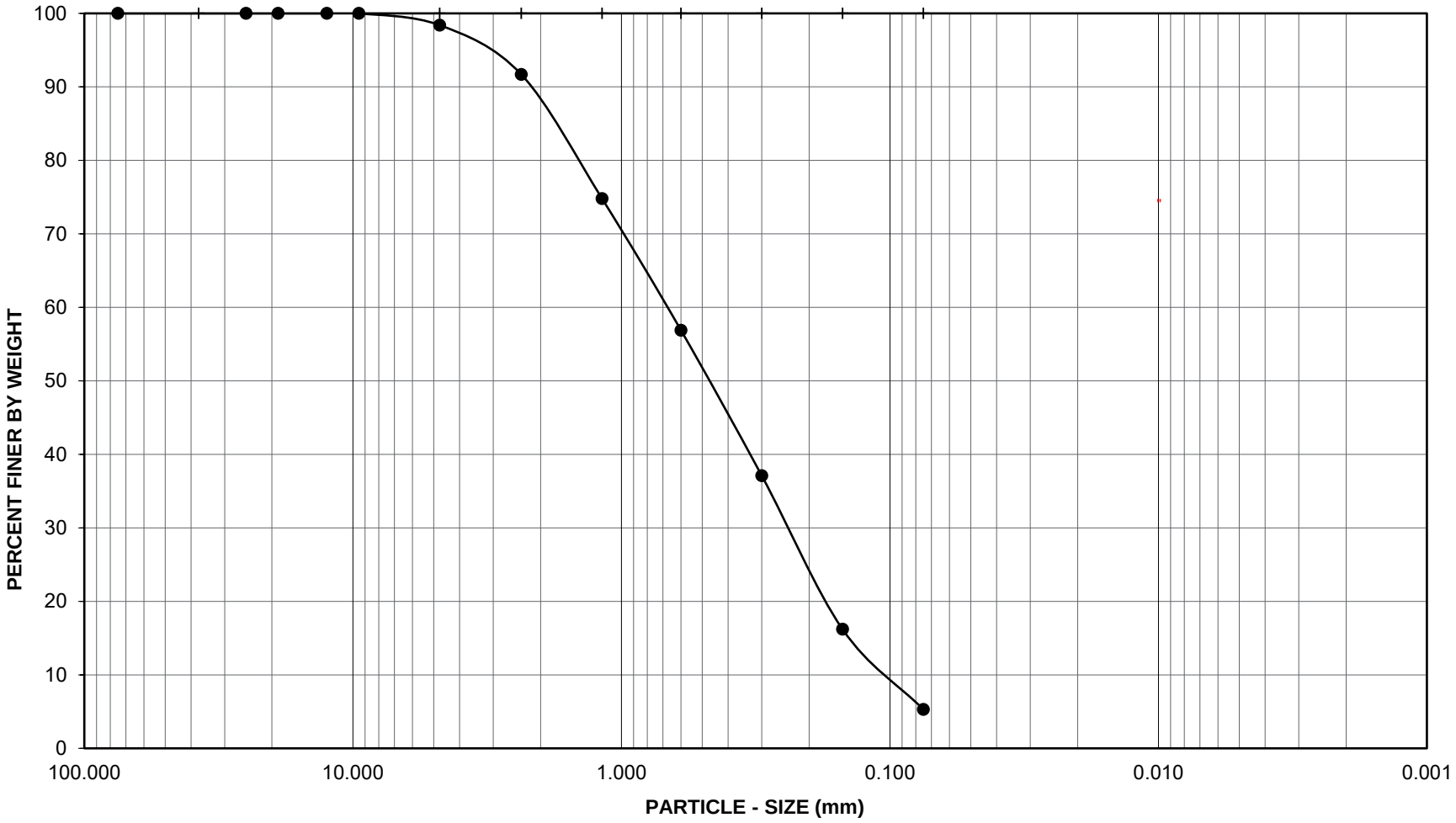
Leighton

PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Oct-22

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

U.S. STANDARD SIEVE OPENING: 3.0" 1 1/2" 3/4" 3/8"
U.S. STANDARD SIEVE NUMBER: #4 #8 #16 #30 #50 #100 #200
HYDROMETER



Project Name: Verano DD/Update

Project No.: 13678.002

Boring No.: LB-4 Sample No.: B-1

Depth (feet): 5.0 - 10.0 Soil Type : SP-SM

Soil Identification: Poorly Graded Sand with Silt (SP-SM), Grayish Brown.

GR:SA:FI : (%) 2 : 93 : 5

Leighton

PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Oct-22

Boring No.	LB-1	LB-7						
Sample No.	R-7	R-3						
Depth (ft.)	35.0	7.0						
Sample Type	RING	RING						
Soil Classification	(SW)g	SP-SM						
Soak Time (min)	10	10						
Moisture Correction								
Wet Weight of Soil + Container (gm.)	1150.8	710.1						
Dry Weight of Soil + Container (gm.)	1142.9	705.5						
Weight of Container (gm)	279.7	279.9						
Moisture Content (%)	0.9	1.1						
Container No.:	MA	20						
Sample Dry Weight Determination								
Weight of Sample + Container (gm.)	1142.9	705.5						
Weight of Container (gm.)	279.7	279.9						
Weight of Dry Sample (gm.)	863.2	425.6						
Container No.:	MA	20						
After Wash								
Dry Weight of Sample + Container (gm)	1117.6	659.4						
Weight of Container (gm)	279.7	279.9						
Dry Weight of Sample (gm)	837.9	379.5						
% Passing No. 200 Sieve	**3**	**11**						
% Retained No. 200 Sieve	97	89						

Leighton

PERCENT PASSING
No. 200 SIEVE
ASTM D 1140

Project Name: Verano DD/Update
Project No.: 13678.002
Client Name: NCP Verano, LLC
Tested By: M. Vinet Date: 10/26/22

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	Verano DD/Update	Tested By:	M. Vinet	Date:	10/27/22
Project No.:	13678.002	Input By:	M. Vinet	Date:	10/27/22
Boring No.:	LB-1	Depth (ft.):	0 - 5.0		
Sample No.:	B-1				
Soil Identification:	Well-Graded Sand with Silt (SW-SM), Grayish Brown.				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.03340 *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	5486	5556	5576	5542		
Weight of Mold (g)	3528	3528	3528	3528		
Net Weight of Soil (g)	1958	2028	2048	2014		
Wet Weight of Soil + Cont. (g)	760.3	754.0	836.0	788.2		
Dry Weight of Soil + Cont. (g)	743.2	724.1	786.8	731.2		
Weight of Container (g)	278.0	279.4	278.3	280.2		
Moisture Content (%)	3.7	6.7	9.7	12.6		
Wet Density (pcf)	129.2	133.9	135.2	132.9		
Dry Density (pcf)	124.7	125.4	123.3	118.0		

Maximum Dry Density (pcf) 125.5 **Optimum Moisture Content (%)** 6.0

PROCEDURE USED

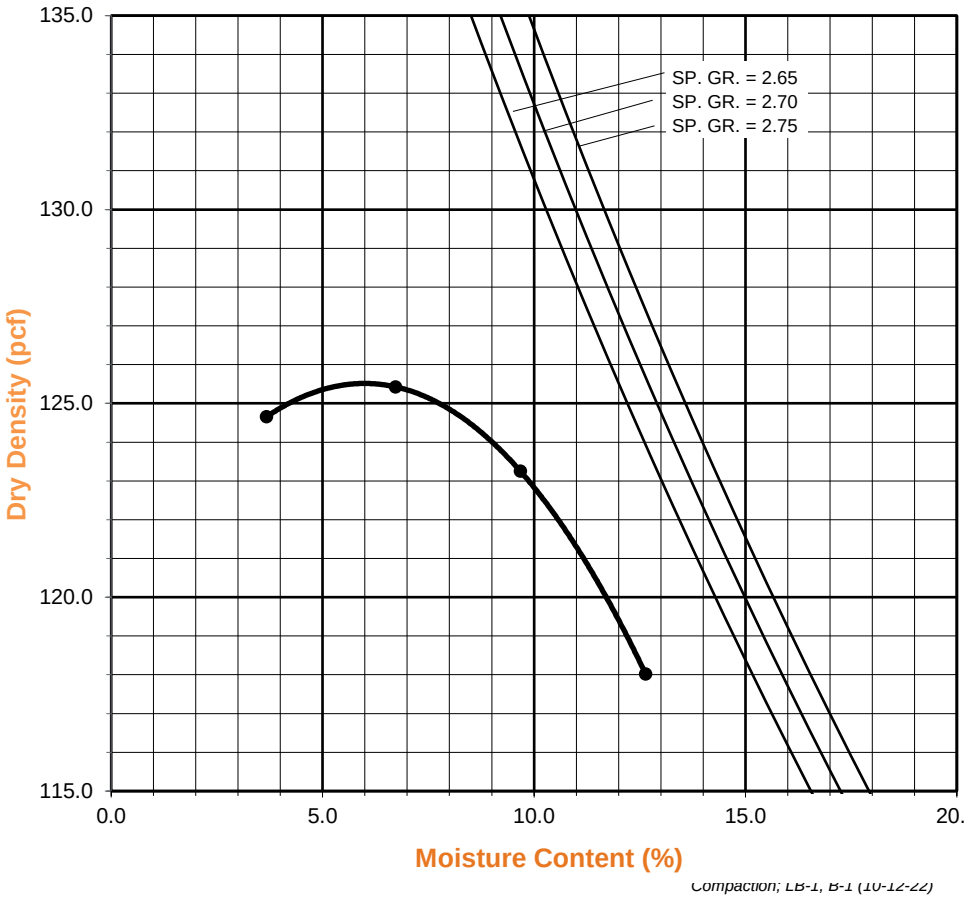
[X] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[ ] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:
2:88:10
GR:SA:FI

Atterberg Limits:
LL,PL,PI



MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	Verano DD/Update	Tested By:	M. Vinet	Date:	10/27/22
Project No.:	13678.002	Input By:	M. Vinet	Date:	10/27/22
Boring No.:	LB-3	Depth (ft.):	0 - 5.0		
Sample No.:	B-1				
Soil Identification:	Well-Graded Sand with Silt (SW-SM), Grayish Brown.				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.03340

Ram Weight = 10 lb.; Drop = 18 in.

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	5412	5516	5580	5582		
Weight of Mold (g)	3528	3528	3528	3528		
Net Weight of Soil (g)	1884	1988	2052	2054		
Wet Weight of Soil + Cont. (g)	803.2	749.0	765.8	838.0		
Dry Weight of Soil + Cont. (g)	785.0	720.4	723.2	775.3		
Weight of Container (g)	277.6	279.8	279.9	278.0		
Moisture Content (%)	3.6	6.5	9.6	12.6		
Wet Density (pcf)	124.4	131.2	135.4	135.6		
Dry Density (pcf)	120.0	123.2	123.6	120.4		

Maximum Dry Density (pcf) 123.9 **Optimum Moisture Content (%)** 8.2

PROCEDURE USED

[X] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

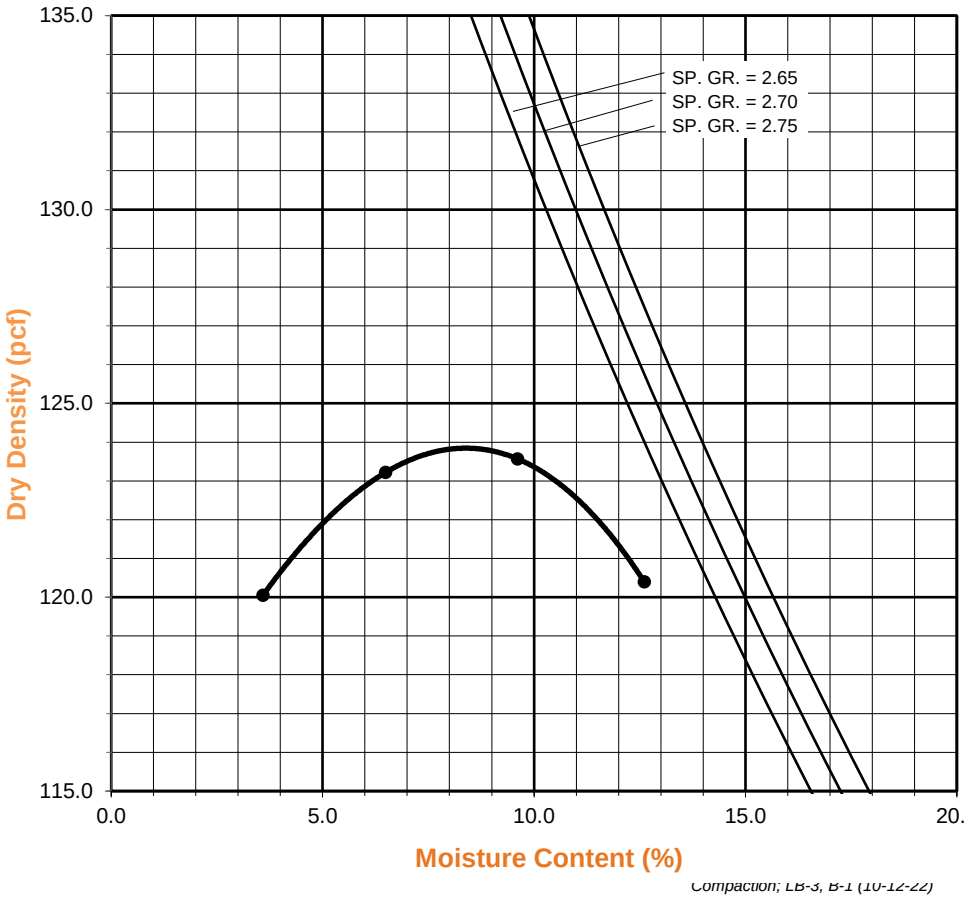
[ ] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI



R-VALUE TEST RESULTS

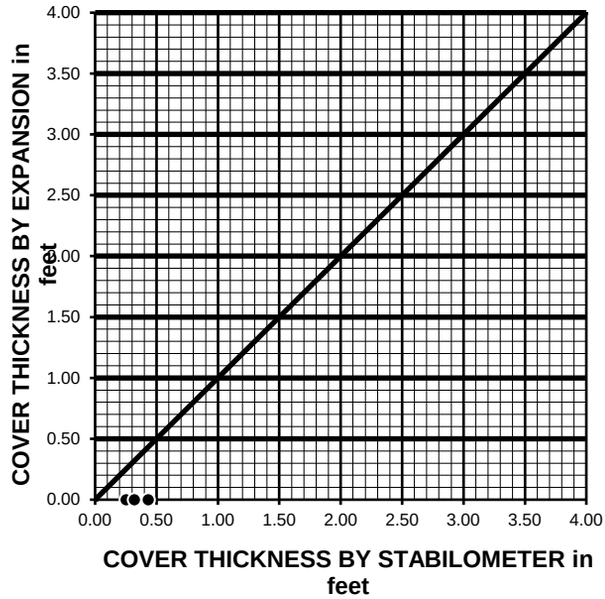
ASTM D 2844

Project Name:	Verano DD/Update	Date:	10/26/22
Project Number:	13678.002	Technician:	F. Mina
Boring Number:	LB-2	Depth (ft.):	0 - 5.0
Sample Number:	B-1		
Sample Description:	Well-Graded Sand with Silt (SW-SM), Brown.	Sample Location:	N/A

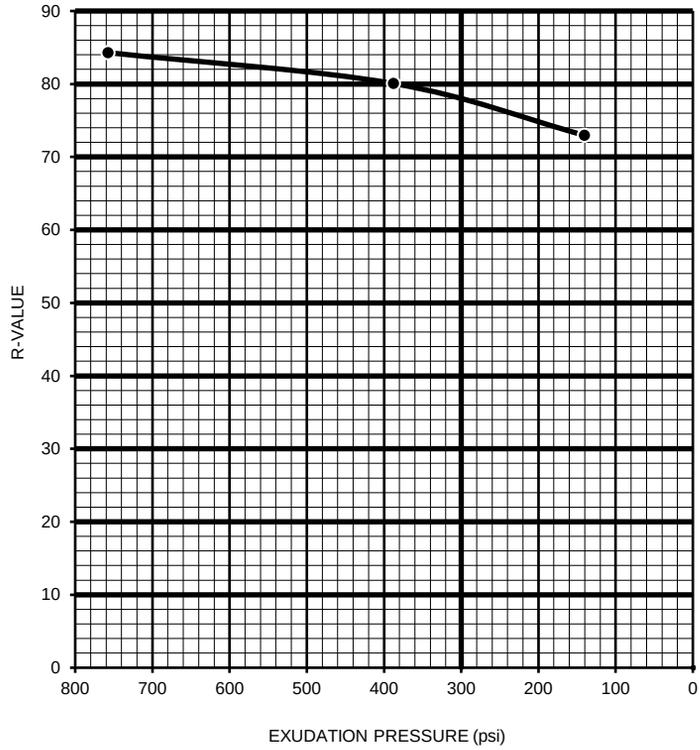
TEST SPECIMEN	A	B	C
MOISTURE AT COMPACTION %	7.5	8.0	8.5
HEIGHT OF SAMPLE, Inches	2.55	2.49	2.55
DRY DENSITY, pcf	116.5	116.5	115.0
COMPACTOR AIR PRESSURE, psi	350	350	350
EXUDATION PRESSURE, psi	758	388	141
EXPANSION, Inches x 10exp-4	0	0	0
STABILITY Ph 2,000 lbs (160 psi)	15	19	25
TURNS DISPLACEMENT	4.50	4.62	5.00
R-VALUE UNCORRECTED	84	80	73
R-VALUE CORRECTED	84	80	73

DESIGN CALCULATION DATA	a	b	c
GRAVEL EQUIVALENT FACTOR	1.0	1.0	1.0
TRAFFIC INDEX	5.0	5.0	5.0
STABILOMETER THICKNESS, ft.	0.25	0.32	0.43
EXPANSION PRESSURE THICKNESS, ft.	0.00	0.00	0.00

EXPANSION PRESSURE CHART



EXUDATION PRESSURE CHART



R-VALUE BY EXPANSION:	24
R-VALUE BY EXUDATION:	17
EQUILIBRIUM R-VALUE:	17

EXPANSION INDEX of SOILS

ASTM D 4829

Project Name:	Verano DD/Update	Tested By:	M. Vinet	Date:	10/26/22
Project No. :	13678.002	Checked By:	M. Vinet	Date:	10/27/22
Boring No.:	LB-7	Depth:	0 - 5.0		
Sample No. :	B-1	Location:	N/A		
Sample Description:	Poorly Graded Sand with Silt (SP-SM), Yellowish Brown.				

Dry Wt. of Soil + Cont. (gm.)	2939.7
Wt. of Container No. (gm.)	0.0
Dry Wt. of Soil (gm.)	2939.7
Weight Soil Retained on #4 Sieve	40.7
Percent Passing # 4	98.6

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	0.9982
Wt. Comp. Soil + Mold (gm.)	585.0	600.2
Wt. of Mold (gm.)	178.0	178.0
Specific Gravity (Assumed)	2.70	2.70
Container No.	7	7
Wet Wt. of Soil + Cont. (gm.)	350.5	600.2
Dry Wt. of Soil + Cont. (gm.)	325.7	373.4
Wt. of Container (gm.)	50.5	178.0
Moisture Content (%)	9.0	13.1
Wet Density (pcf)	122.8	127.6
Dry Density (pcf)	112.6	112.8
Void Ratio	0.497	0.494
Total Porosity	0.332	0.331
Pore Volume (cc)	68.7	68.3
Degree of Saturation (%) [S meas]	**48.9**	**71.4**

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h.

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
10/26/22	8:00	1.0	0	0.5000
10/26/22	8:10	1.0	10	0.5000
	Add Distilled Water to the Specimen			
10/27/22	8:00	1.0	1430	0.4982
10/27/22	9:00	1.0	1490	0.4982

Expansion Index (EI meas) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	-1.8
Expansion Index (Report) = Nearest Whole Number or Zero (0) if Initial Height is > than Final Heigh	**0**

SOIL RESISTIVITY TEST

DOT CA TEST 643

Project Name:	Verano DD/Update		Tested By :	M. Vinet	Date: 10/26/22
Project No. :	13678.002		Data Input By:	M. Vinet	Date: 10/27/22
Boring No.:	LB-1		Depth (ft.) :	0 - 5.0	
Sample No. :	B-1				

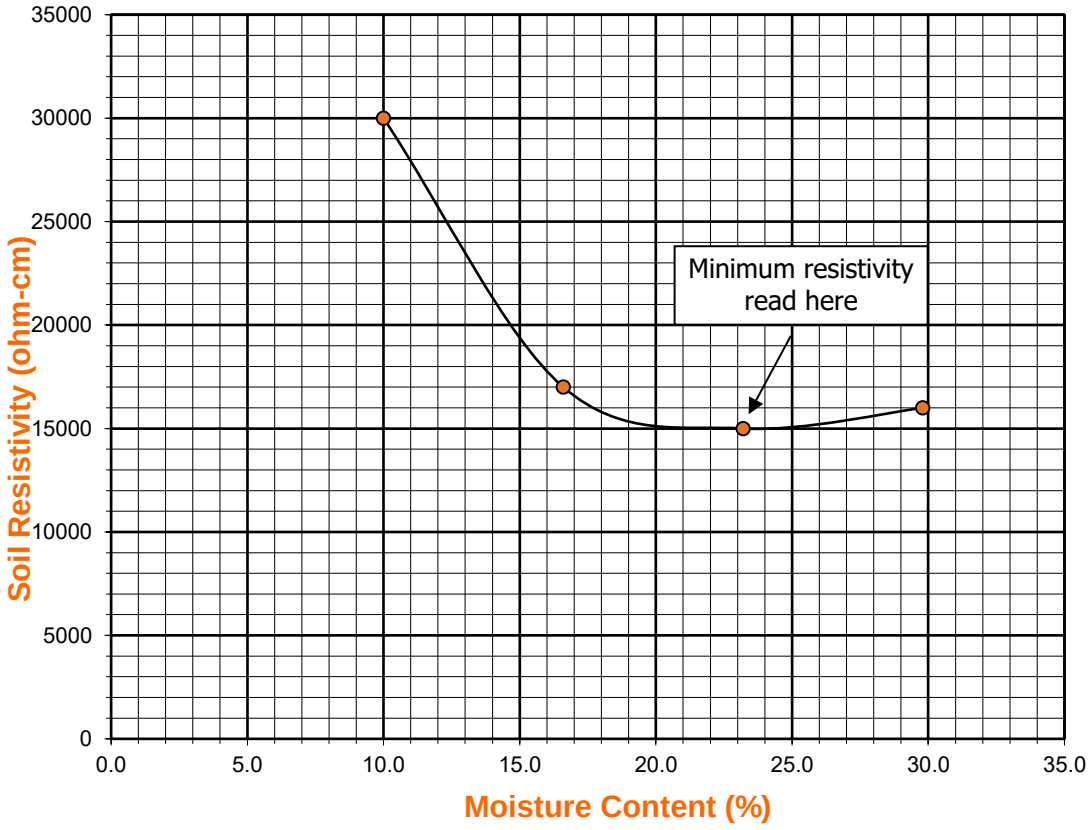
Soil Identification:* Well-Graded Sand with Silt (SW-SM)

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	50	10.00	30000	30000
2	83	16.60	17000	17000
3	116	23.20	15000	15000
4	149	29.80	16000	16000
5				

Moisture Content (%) (MCi)	0.00
Wet Wt. of Soil + Cont. (g)	100.00
Dry Wt. of Soil + Cont. (g)	100.00
Wt. of Container (g)	0.00
Container No.	A
Initial Soil Wt. (g) (Wt)	500.00
Box Constant	1.000
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 643	
15000	**23.2**	**152**	**20**	**7.30**	**21.0**



APPENDIX C

EARTHWORK AND GRADING SPECIFICATIONS

LEIGHTON AND ASSOCIATES, INC.

GENERAL EARTHWORK AND GRADING SPECIFICATIONS FOR ROUGH GRADING

TABLE OF CONTENTS

1.0 General

1.1 Intent

These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 The Geotechnical Consultant of Record

Prior to commencement of work, the owner shall employ the Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultants shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required. Subsurface areas to be geotechnically observed, mapped, elevations recorded, and/or tested include natural ground after it has been cleared for receiving fill but before fill is placed, bottoms of all "remedial removal" areas, all key bottoms, and benches made on sloping ground to receive fill.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to determine the attained level of compaction. The Geotechnical Consultant shall provide the test results to the owner

and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor

The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the plans and specifications.

The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "spreads" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate observations and tests can be planned and accomplished. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified.

2.0 Preparation of Areas to be Filled

2.1 Clearing and Grubbing

Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 5 percent of organic matter. Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed.

2.2 Processing

Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soils are broken down and free of large clay lumps or clods and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Overexcavation

In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

2.5 Evaluation/Acceptance of Fill Areas

All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 General

Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 Oversize

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import

If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 Fill Layers

Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill Moisture Conditioning

Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557).

4.3 Compaction of Fill

After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes

In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557.

4.5 Compaction Testing

Field-tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing

Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the

testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations

The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

7.1 Safety

The Contractor shall follow all OSHA and Cal/OSHA requirements for safety of trench excavations.

7.2 Bedding and Backfill

All bedding and backfill of utility trenches shall be performed in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of relative compaction from 1 foot above the top of the conduit to the surface.

The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

7.3 Lift Thickness

Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.

7.4 Observation and Testing

The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.

APPENDIX D

GBA - IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL ENGINEERING REPORT

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

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PALEONTOLOGICAL ASSESSMENT FOR THE VERANO RESIDENTIAL PROJECT

CATHEDRAL CITY
RIVERSIDE COUNTY, CALIFORNIA

APNs 677-050-017, -018, -027, -029, and -031 through -034

Prepared on Behalf of:

EPD Solutions, Inc.
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Prepared for:

City of Cathedral City
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June 20, 2023; Revised January 2, 2024

BFSA Environmental Services
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Paleontological Database Information

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Consulting Firm:	BFSA Environmental Services, a Perennial Company 14010 Poway Road, Suite A Poway, California 92064
Report Date:	June 20, 2023; Revised January 2, 2024
Report Title:	Paleontological Assessment for the Verano Residential Project, Cathedral City, Riverside County, California
Prepared for:	EPD Solutions, Inc. 2355 Main Street, Suite 100 Irvine, California 92614
Submitted to:	City of Cathedral City 68700 Avenida Lalo Guerrero Cathedral City, California 92234
USGS Quadrangle:	Section 5, Township 4 South, Range 5 East, of the *Cathedral City, California* USGS quadrangle
Assessor's Parcel Numbers:	677-050-017, -018, -027, -029, and -031 through -034
Study Area:	128.34 acres
Key Words*:*	Low paleontological resource sensitivity; Holocene alluvial deposits; no monitoring recommended.

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List of Figures

I. INTRODUCTION AND LOCATION

This paleontological resource assessment report has been completed for the Verano Residential Project, located between Interstate 10 and Vista Chino in the northern portion of the city of Cathedral City in Riverside County, California (Figure 1). More specifically, the project is situated north of the intersection of Verona Road and Ventura Drive and includes Assessor's Parcel Numbers (APNs) 677-050-017, -018, -027, -029, and -031 through -034, which total 128.34 acres. In addition, there is an existing sand berm to the west of the project which is planned to be "reformed" as part of an off-site improvement that is attached to the project. An access road for sand berm maintenance will also be constructed as an off-site improvement along a portion of the northern project boundary. The subject property is within Section 5, Township 4 South, Range 5 East of the San Bernardino Baseline and Meridian, as shown on the U.S. Geological Survey (USGS) (7.5-minute) *Cathedral City, California* topographic quadrangle map (Figure 2). The project proposes to clear the project parcels for the construction of a residential subdivision.

As the lead agency, the City of Cathedral City has required the preparation of a paleontological assessment to evaluate the project's potential to yield paleontological resources. The paleontological assessment of the project included a review of paleontological literature and fossil locality records for a previous project in the area, a review of the underlying geology, and recommendations to mitigate impacts to potential paleontological resources, if necessary.

II. REGULATORY SETTING

The California Environmental Quality Act (CEQA), which is patterned after the National Environmental Policy Act, is the overriding environmental regulation that sets the requirement for protecting California's paleontological resources. CEQA mandates that governing permitting agencies (lead agencies) set their own guidelines for the protection of nonrenewable paleontological resources under their jurisdiction.

State of California

Under "Guidelines for Implementation of the California Environmental Quality Act," as amended in December 2018 (California Code of Regulations [CCR] Title 14, Division 6, Chapter 3, Sections 15000 et seq.), procedures define the types of activities, persons, and public agencies required to comply with CEQA. Section 15063 of the CCR provides a process by which a lead agency may review a project's potential impact to the environment, whether the impacts are significant, and provide recommendations, if necessary.

In CEQA's Environmental Checklist Form, one of the questions to answer is, "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (Appendix G, Section VII, Part f). This is to ensure compliance with California Public

Resources Code Section 5097.5, the law by which protects nonrenewable resources including fossils, which is paraphrased below:

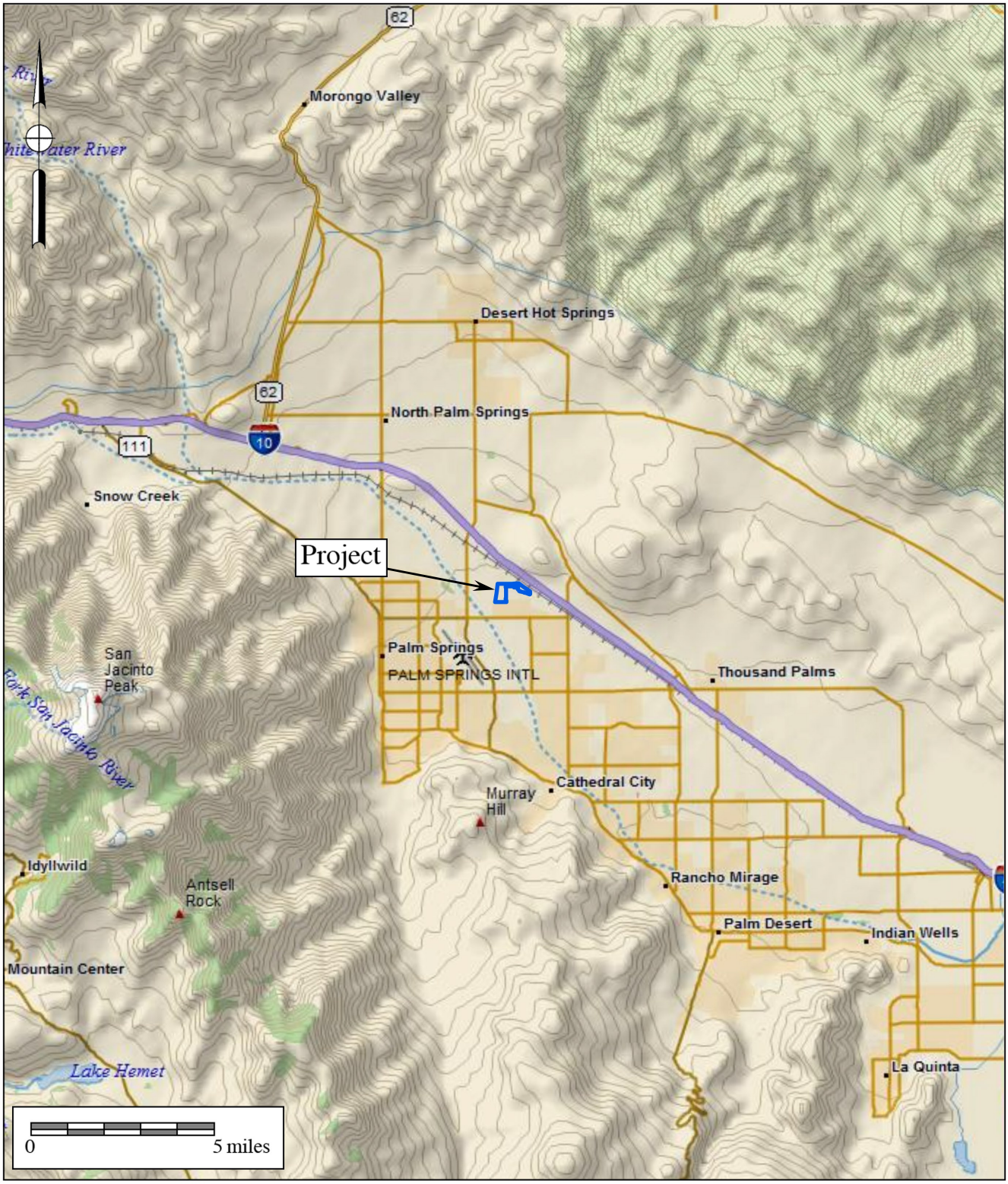

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Figure 1
General Location Map
The Verano Residential Project
DeLorme (1:250,000 series)

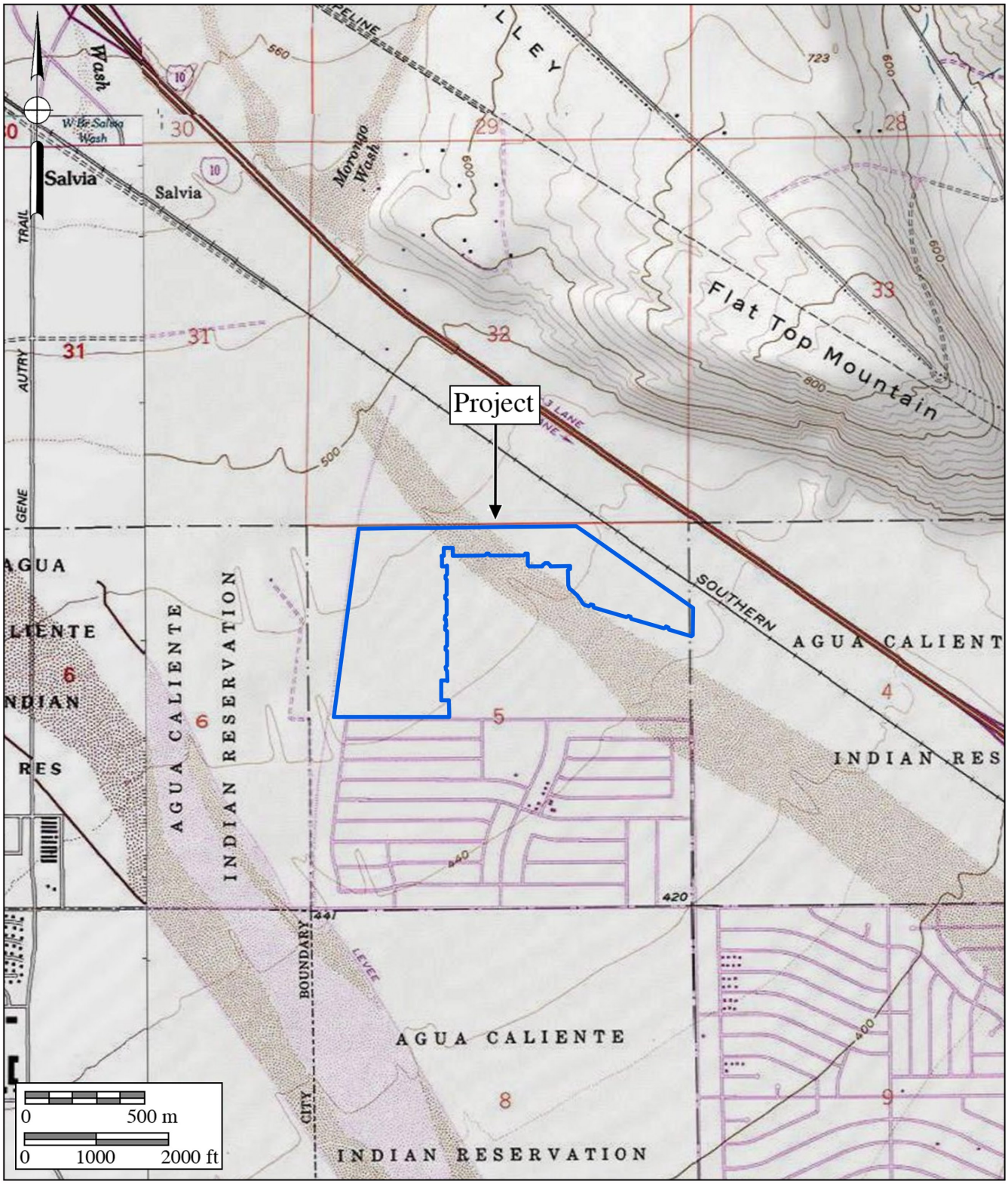

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Figure 2
Project Location Map

The Verano Residential Project

USGS *Cathedral City* Quadrangle (7.5-minute series)

a) A person shall not knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands.
b) As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.
c) A violation of this section is a misdemeanor.

County of Riverside Guidelines

For Riverside County, policies concerning paleontological resources are addressed under the 2015 Multipurpose Open Space Element of the Riverside County General Plan and are as follows:

OS 19.6 Whenever existing information indicates that a site proposed for development has high paleontological sensitivity as shown on Figure OS-8, a paleontological resource impact mitigation program (PRIMP) shall be filed with the County Geologist prior to site grading. The PRIMP shall specify the steps to be taken to mitigate impacts to paleontological resources.

OS 19.7 Whenever existing information indicates that a site proposed for development has low paleontological sensitivity as shown on Figure OS-8 [in the General Plan], no direct mitigation is required unless a fossil is encountered during site development. Should a fossil be encountered, the County Geologist shall be notified and a paleontologist shall be retained by the project proponent. The paleontologist shall document the extent and potential significance of the paleontological resources on the site and establish appropriate mitigation measures for further site development.

OS 19.8 Whenever existing information indicates that a site proposed for development has undetermined paleontological sensitivity as shown on Figure OS-8 [in the General Plan], a report shall be filed with the County Geologist documenting the extent and potential significance of the paleontological resources on site and identifying mitigation measures for the fossil and for impacts to significant paleontological

resources prior to approval of that department.

OS 19.9 Whenever paleontological resources are found, the County Geologist shall direct them to a facility within Riverside County for their curation, including the Western Science Center [WSC] in the City of Hemet. (County of Riverside 2015a)

A comprehensive review of paleontological resources, including regulatory background, permitting conditions, significance thresholds, and procedures for the treatment of discovered resources, can be found in the County's Draft Environmental Impact Report (County of Riverside 2015b).

City of Cathedral City Guidelines

The Cathedral City General Plan does not address paleontological resources (City of Cathedral City 2009).

III. GEOLOGY

Regionally, the project lies within the Salton Trough, a depressed structural block bounded on the west by the San Jacinto, Santa Rosa, and Coyote mountains and on the east by the San Andreas fault zone and Edom Hill, the Indio Hills, and the Mecca Hills (Norris and Webb 1990; Dibblee 2008). Based on mapping and descriptions by Rogers (1965) and Dibblee (2008), the project is within Holocene alluvium and/or dune sands. More precise mapping by Lancaster et al. (2012) indicates the geology at the surface of most of the project consists of late Holocene alluvial wash deposits, composed of unconsolidated sands and gravels deposited by recently active channels or streams (gray areas labeled "Qw" on Figure 3). Portions of the project's western parcels are mapped as late Holocene eolian or sand dune deposits, composed of well sorted, wind-blown sand (pale green, dotted areas labeled "Qe" on Figure 3).

IV. PALEONTOLOGICAL RESOURCES

Definition

Paleontological resources are the remains of prehistoric life that have been preserved in geologic strata. These remains are called fossils and include bones, shells, teeth, and plant remains (including their impressions, casts, and molds) in the sedimentary matrix, as well as trace fossils such as footprints and burrows. Fossils are considered older than 5,000 years of age (Society of Vertebrate Paleontology 2010) but may include younger remains (subfossils) when viewed in the context of local extinction of the organism or habitat, for example. Fossils are considered a non-renewable resource under state and local guidelines (Section II of this report).

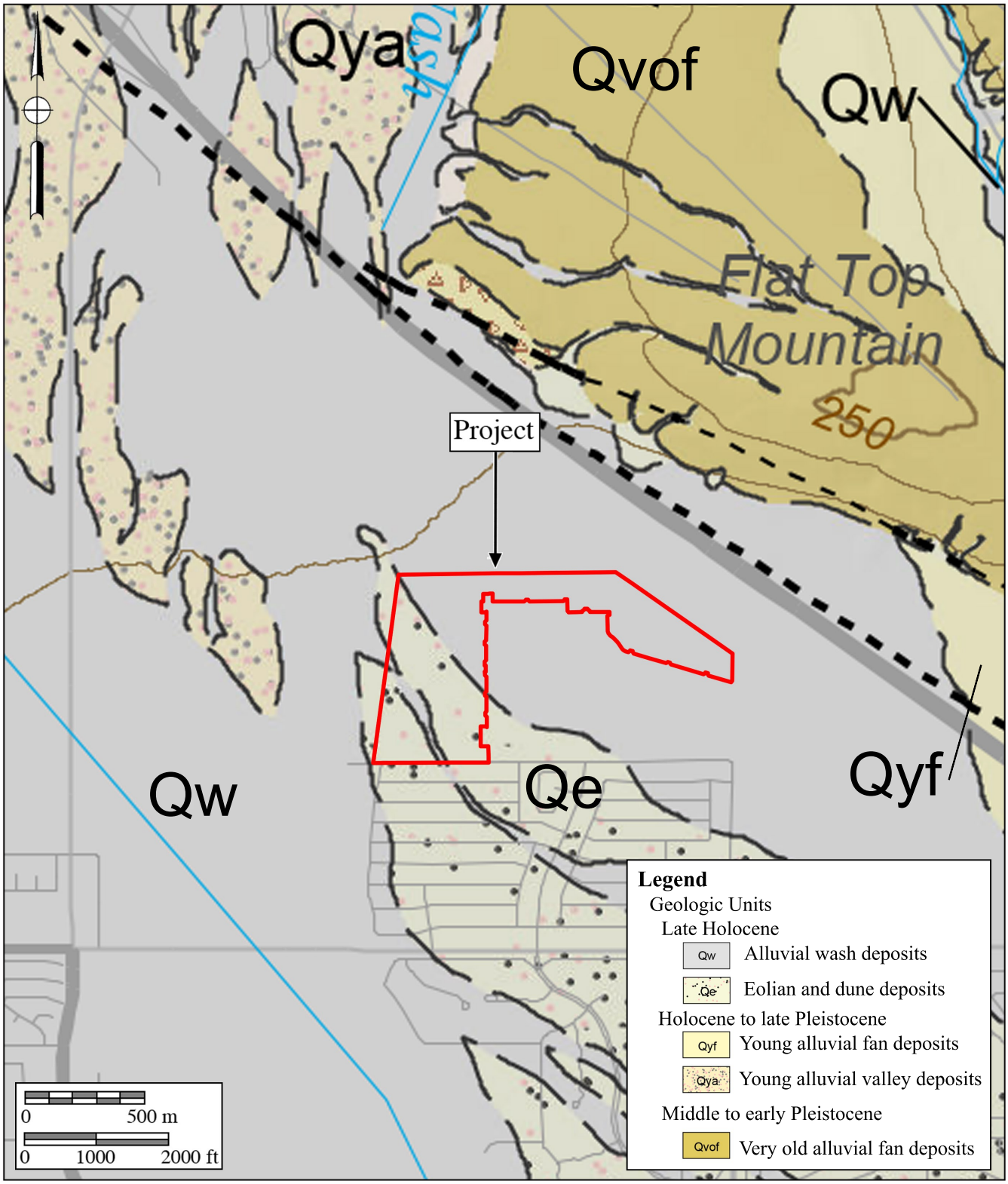

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Figure 3
Geologic Map
The Verano Residential Project
Geology after Lancaster et al. (2012)

Fossil Locality Search

A paleontological literature review and collections and locality records search was conducted for the project using data from prior, nearby projects performed by BFSA. Sources for past record searches include the San Bernardino County Museum (SBCM) and WSC. The nearest fossil localities held by the SBCM are several miles away to the south from the Pleistocene-aged Ocotillo Formation and consist of bone and tooth fragments of *Equus* sp., *Mammut pacificus*, and *Mammuthus columbi* (Kottcamp 2023). The WSC does not have fossil localities within this area of Coachella Valley (Stoneburg 2022).

According to published literature, the nearest fossil localities occur at Garnet Hill, approximately five miles northwest of the project, along the south side of Interstate 10. Garnet Hill mostly consists of an outcrop of the upper Miocene-aged Imperial Formation, documenting an early incursion of marine flooding of the proto-Gulf of California. A diverse fauna of late Miocene-aged invertebrates, mostly bivalve mollusks with some echinoderm remains (sand dollars and urchins), have been documented there since the 1930s. These specimens are held by the Museum of Paleontology at the University of California, Berkeley (Powell 1995).

Project Survey

On June 5 and 6, 2023, BFSA staff, under the supervision of Principal Investigator Todd A. Wirths, conducted an intuitive review of the property to determine if any paleontological resources were visible. The field methodology employed for the project included walking evenly spaced survey transects set approximately 15 meters apart while visually inspecting the ground surface. All potentially sensitive areas where paleontological resources might be located were closely inspected. The project was observed as previously graded, with housing pads and streets laid out. Stockpiles of sand and rock were present, as well as a cinder block wall. Paved roads from developed properties from the southeast extended into the project. Active deposits of wind-blown sand were present throughout the surfaces of the project. No bedrock outcrops were exposed that might suggest the presence of fossils. No paleontological resources, or evidence of paleontological resources, were observed during the survey.

V. PALEONTOLOGICAL SENSITIVITY

Overview

The degree of paleontological sensitivity of any particular area is based on a number of factors, including the documented presence of fossiliferous resources on a site or in nearby areas, the presence of documented fossils within a particular geologic formation or lithostratigraphic unit, and whether or not the original depositional environment of the sediments is one that might have been conducive to the accumulation of organic remains that may have become fossilized over time. Holocene alluvium is generally considered to be geologically too young to contain significant nonrenewable paleontological resources (*i.e.,* fossils) and thus is typically assigned a low paleontological sensitivity. Pleistocene (more than 11,700-year-old) alluvial and alluvial fan

deposits in western Riverside County, however, often yield important Ice Age terrestrial vertebrate fossils, such as extinct mammoths, mastodons, giant ground sloths, extinct species of horse, bison, camel, saber-toothed cats, and others (Jefferson 1991). These Pleistocene sediments are thus accorded a high paleontological resource sensitivity.

Professional Standards

The Society of Vertebrate Paleontology (SVP 2010) has drafted guidelines that include four categories of paleontological sensitivity for geologic units (formations) that might be impacted by a proposed project, as listed below:

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

Using these criteria, the Holocene deposits mapped at the project may be considered to have a low potential to yield significant paleontological resources.

Riverside County Sensitivity

The County of Riverside Land Information System ranks the Holocene alluvium at the project properties as having a "Low" paleontological sensitivity (County of Riverside Land Information System 2023). The category "Low" indicates that fossils are unlikely to be encountered during excavation activities and, therefore, there is a low potential for significant paleontological resources that could be adversely impacted.

VI. CONCLUSION AND RECOMMENDATIONS

Based on the young age of the alluvium at the project, a low potential for the occurrence of paleontological resources within the young alluvium, and the lack of known paleontological localities in the area of the project, paleontological monitoring during earth disturbance activities at the project is not recommended. A paleontological resource impact mitigation program for the project is not warranted.

VII. CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this paleontological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief and have been compiled in accordance with CEQA criteria.

January 2, 2024

Todd A. Wirths
Senior Paleontologist
California Professional Geologist No. 7588

Date

VIII. REFERENCES

City of Cathedral City. 2009. City of Cathedral City Comprehensive General Plan. https://www.cathedralcity.gov/services/planning/documents/general-plan.

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APPENDIX A

Qualifications of Key Personnel

Todd A. Wirths, MS, PG No. 7588

Senior Paleontologist

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Education

Master of Science, Geological Sciences, San Diego State University, California **1995**

Bachelor of Arts, Earth Sciences, University of California, Santa Cruz **1992**

Professional Certifications

California Professional Geologist #7588, 2003
Riverside County Approved Paleontologist
San Diego County Qualified Paleontologist
Orange County Certified Paleontologist
OSHA HAZWOPER 40-hour trained; current 8-hour annual refresher

Professional Memberships

Board member, San Diego Geological Society
San Diego Association of Geologists; past President (2012) and Vice President (2011)
South Coast Geological Society
Southern California Paleontological Society

Experience

Mr. Wirths has more than a dozen years of professional experience as a senior-level paleontologist throughout southern California. He is also a certified California Professional Geologist. At BFSA, Mr. Wirths conducts on-site paleontological monitoring, trains and supervises junior staff, and performs all research and reporting duties for locations throughout Los Angeles, Ventura, San Bernardino, Riverside, Orange, San Diego, and Imperial Counties. Mr. Wirths was formerly a senior project manager conducting environmental investigations and remediation projects for petroleum hydrocarbon-impacted sites across southern California.

Selected Recent Reports

2019 *Paleontological Assessment for the 10575 Foothill Boulevard Project, City of Rancho Cucamonga, San Bernardino County, California*. Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Assessment for the MorningStar Marguerite Project, Mission Viejo, Orange County, California.* Prepared for T&B Planning. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Monitoring Report for the Nimitz Crossing Project, City of San Diego.* Prepared for Voltaire 24, LP. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Resource Impact Mitigation Program (PRIMP) for the Jack Rabbit Trail Logistics Center Project, City of Beaumont, Riverside County, California.* Prepared for JRT BP 1, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Monitoring Report for the Oceanside Beachfront Resort Project, Oceanside, San California.* Prepared for S.D. Malkin Properties. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Impact Mitigation Program for the Nakase Project, Lake Forest, Orange County, San California.* Prepared for Glenn Lukos Associates, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Impact Mitigation Program for the Sunset Crossroads Project, Banning, Riverside County*. Prepared for NP Banning Industrial, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Assessment for the Ortega Plaza Project, Lake Elsinore, Riverside County*. Prepared for Empire Design Group. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Record Search Update for the Green River Ranch III Project, Green River Ranch Specific Plan SP00-001, City of Corona, California*. Prepared for Western Realco. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Assessment for the Cypress/Slover Industrial Center Project, City of Fontana, San Bernardino County, California*. Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Monitoring Report for the Imperial Landfill Expansion Project (Phase VI, Segment C-2), Imperial County, California*. Prepared for Republic Services, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Assessment for the Manitou Court Logistics Center Project, City of Jurupa Valley, Riverside County, California*. Prepared for Link Industrial. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Resource Impact Mitigation Program for the Del Oro (Tract 36852) Project, Menifee, Riverside County*. Prepared for D.R. Horton. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Assessment for the Alessandro Corporate Center Project (Planning Case PR-2020-000519), City of Riverside, Riverside County, California*. Prepared for OZI Alessandro, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Monitoring Report for the Boardwalk Project, La Jolla, City of San Diego*. Prepared for Project Management Advisors, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

Northlight Capital Partners Verano LLC
55 Saugatuck Avenue, 1st Floor
Westport, CT 06880

Report of Phase I
Environmental Site Assessment
Verano Development
APNs 677-050-015, -016, -017, -018, -023,
-027, -029, -031, -032, -033, & -034
W of Landau Boulevard & N of Verona Road
Cathedral City, Riverside County, California

May 15, 2023

Submitted By:
Earth Systems Pacific
79811B Country Club Drive
Bermuda Dunes, California 92203

File No. 305289-002
Doc. No.: 23-05-703

EARTH SYSTEMS
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May 15, 2023

File No. 305289-001
Doc. No.: 23-05-703

Northlight Capital Partners Verano LLC
55 Saugatuck Avenue, 1st Floor
Westport, CT 06880

Attention: Mr. Ben Gerig, CEO

Subject: **Report of Phase I Environmental Site Assessment**

Project: **Verano Development**
APNs 677-050-015, -016, -017, -018, -023,
-027, -029, -031, -032, -033, & -034
W of Landau Boulevard & N of Verona Road
Cathedral City, Riverside County, California

As you requested, Earth Systems Pacific [Earth Systems] has completed this Phase I Environmental Site Assessment [ESA] of the site referenced above. This report was prepared for your exclusive use. It was prepared to stand as a whole, and no part should be excerpted or used in exclusion of any other part. This ESA is a requirement for the existing CEQA planning document for the full build-out of the (Verano Development) community. The project was conducted in accordance with our proposal dated April 19, 2023. Thank you for this opportunity to be of service. If you have any questions regarding this report, or the information contained herein, please contact this office at your convenience.

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in 40 CFR 312.10. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history and setting of the subject site. I have endeavored to perform this project in conformance with the standards and practices set forth in 40 CFR 312.

Respectfully submitted,
EARTH SYSTEMS PACIFIC

Alexander Schriener, Jr., PG 7198
Associate Geologist

PROFESSIONAL GEOLOGIST
ALEXANDER SCHRIENER JR.
No. 7198
Exp. 07/31/2023
STATE OF CALIFORNIA

ESA/asj/jt/klm/cgj

Distribution: 6/Northern Capital Partners Verano LLC
1/BER

Report of Phase I
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W of Landau Boulevard & N of Verona Road
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May 15, 2023

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Project Information

This report presents the findings of the Phase I Environmental Site Assessment [ESA] conducted by Earth Systems Pacific [Earth Systems] for the Verano Development, located west of Landau Boulevard and north of Verona Road in Cathedral City, Riverside County, California [the site]. This project was conducted for Northern Capital Partners Verano LLC in accordance with our proposal dated April 19, 2023. In 2022, Earth Systems conducted an ESA for property, which included the site, and summarized previous ESAs for the property. We understand the site plan is for residential development. This project has been performed at the request of the client for due diligence purposes. We are not aware of special requirements for this ESA.

1.2 Purpose and Scope of Work

The purpose of an ESA is to evaluate the potential for the presence of soil or groundwater contamination that may be present because of the past use, handling, storage, or disposal of hazardous materials or petroleum products on or near the property. The scope of work for this evaluation is based on the United States Environmental Protection Agency Final All Appropriate Inquiry Rule (2006) [US EPA AAI]; and, the ASTM Standard E1527-13, *Standard Practice for Environmental Site Assessments,* and consisted of the tasks listed below.

Site Reconnaissance: This involved a visual reconnaissance of the site, noting physical evidence of potential contamination or possible sources of contamination; and observation of adjacent properties to identify readily observable visual evidence of possible impacts to the subject site. Figures depicting the site location and layout are presented in Appendix A. Significant onsite features were photographed to document current conditions. Selected site photographs are presented in Appendix B.

Records Review: Records regarding the regulatory status and history of the site were evaluated regarding the possible presence of Recognized Environmental Conditions [REC]. Regulatory agency records were reviewed by obtaining a report listing known sites that generate, store, use, and/or have released hazardous materials from a firm that specializes in maintaining a database of this type of information. A copy of the agency database search report is presented in Appendix C and is discussed in Section 5.1. The search radius for the agency database search was in accordance with the US EPA AAI and ASTM standard E1527-13 as measured from the site boundary. Other sources of information are listed in the references section of this report and may include the following categories of information (note that each category is utilized at the discretion of Environmental Professional [EP] until, in the EP's opinion, sufficient data has been obtained):

- Historical aerial photographs
- Topographic maps
- California Department of Oil, Gas, and Geothermal Resources maps
- Fire insurance maps
- Land title information

- Local street directories
- Zoning/land use records
- Engineering and institutional controls, such as deed restrictions and restrictive zoning to a radius of ¼ mile, if contained in publicly available lists/registries
- Tribal records of subject property and adjoining properties (if tribal land)
- Local government records such as building department files
- Environmental cleanup liens
- Prior reports

If the property was not previously developed, sources such as building department files and street directories were not reviewed. Relevant supporting documents are provided in Appendix D.

Interviews: Persons familiar with the site were interviewed (if possible) regarding the potential presence of RECs on the site or in a position to affect the site, including the site owner/operator/occupant, former site owners/operators/occupants (if reasonably accessible), neighboring property occupants (if the site is abandoned), and selected government personnel likely to have information regarding environmental conditions at or near the site. Information from persons who were successfully contacted is presented in Section 6.

Report Preparation: This report was prepared to present our findings, conclusions, and recommendations.

1.3 Definitions

ASTM E1527-13 provides definitions for 102 terms and 27 acronyms used in the ESA process. Earth Systems endeavors to use these terms and acronyms within the meaning provided by ASTM E1527-13. The majority of these terms are either obvious in their meaning or are seldom used in this report, but a few are significant enough to warrant defining here, as follows:

Site: The term "site" is used in place of the term "property" as defined by ASTM E1527-13 and is the physical location that is the subject of the assessment. The site can include more than one parcel of land, or only a portion of a parcel of land, depending on the needs of the client. ESAs focus primarily on activities that occur within the boundaries of the site, or that could potentially affect conditions and activities within the boundaries of the site. RECs on offsite properties that are not likely to affect the site are not considered to be RECs for the subject site.

Recognized Environmental Condition [REC]: the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to a release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The term does not include *de minimis* conditions.

Controlled Recognized Environmental Condition [CREC]: An REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum projects allowed to remain in place subject to the implementation of required controls.

Historical Recognized Environmental Condition [HREC]: A past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (such as use restriction). HRECs are no longer RECs for a site.

De minimus: A condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

Environmental Professional [EP]: An EP is defined by US EPA AAI as "a person who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding conditions indicative of releases or threatened releases (of hazardous substances) on, at, in, or to a property, sufficient to meet the objectives and performance factors (of the rule)." Specific minimum credentials are required by US EPA AAI and ASTM E1527-13 to be identified as an EP.

User: The "user" of the report is defined by ASTM Practice E1527-13 as the party for whom the assessment is being conducted (the "client"), not the EP.

1.4 Qualifications

Work on this project was performed under the direct supervision of an Environmental Professional [EP], in accordance with the US EPA AAI and ASTM E1527-13 requirements. Mr. Alexander Schriener, Jr. (PG) was the lead EP, the project manager, and provided senior review. Mr. Josh Thomas, Field Services Supervisor, and Mr. Schriener conducted the site reconnaissance. Ms. Kirsten Murch, Project Geologist, conducted historical aerial photograph review, other historical review, and agency database review. A qualifications statement regarding the personnel who performed this evaluation is presented in Appendix E.

1.5 Exclusions and Data Gaps

The scope of work for this ESA did not include testing the air, groundwater, soil, or building materials for the presence of hazardous constituents.

The US EPA AAI and ASTM E1527-13 require that gaps in the data used in evaluating the site be identified. Data gaps encountered in this project, and their significance to the project, are summarized below.

- As stated in the proposal, land title information would only be reviewed if furnished by the Client. Land title information was not provided to Earth Systems, and therefore was not reviewed. Because of the availability of other data sources (e.g., aerial photographs and prior reports), the lack of title information is not considered to be significant.

- Prior owners, operators, or employees of the site or owners, operators, or employees of adjacent properties could not be contacted to be interviewed. This data gap is not considered significant given the availability of other sources of information; and the existing development having been limited to residential grading and street development.

- City building department records were not requested because structures were not built on the site since the prior evaluation.

- Historical street directories were not requested since a street address is needed for that research. This data gap is not considered significant due to the site's essentially vacant nature and residential or undeveloped status of the vicinity.

- Sanborn maps were not available for the site. This data gap is not considered to be significant since the site and much of the vicinity is undeveloped and developed properties nearby are residential.

Further investigations regarding the data gaps do not appear warranted.

1.6 Limitations and Reliance

This report has been prepared for the exclusive use of Northern Capital Partners LLC. Other parties participating in the transaction for which this project was conducted may also use the information presented in this report, provided said parties agree that Earth Systems shall have no additional liability arising from such use than described in the contract under which this project was conducted. Any other use of or reliance on the information and opinions contained in this report without the written authorization of Earth Systems is at the sole risk of the user (to apply for written authorization to rely on this report, please complete and submit the application provided in Appendix F).

Note that the conclusions and recommendations rendered in this report are opinions based on readily available information obtained to date within the scope of the work authorized by the client and apply only to site conditions as of the date of the site visit. The scope of work for this project was developed to address the needs of the client as part of a property transaction (purchase, sale, refinance, etc.) and may not meet the needs of other users.

It should be noted that any level of assessment cannot ascertain that a property is completely free of chemical or toxic substances. We believe the scope of work has been appropriate to allow the client to make an informed business decision. According to US EPA AAI and ASTM E1527-13: the "shelf life" of an ESA report is six months; an "Update" can be provided to the client within the first year of the report's publication (at an additional cost); and if the report is older than one year, the ESA should be re-conducted. Changes in site conditions can render this report obsolete within a shorter period of time. Use of this report outside of these time frames or after site

conditions have changed is at the sole risk of the user and without liability and legal exposure to Earth Systems.

The results contained in this report are based upon the information acquired during the assessment, including information obtained from third parties. Earth Systems makes no claim as to the accuracy of the information obtained from others. In addition, it is possible that variations exist beyond or between points evaluated during this assessment, and that changes in conditions can occur in the future due to the works of man, contaminant migration, variations in rainfall or temperature, a broadening of knowledge, changes in regulatory standards, and/or other factors not apparent at the time of the field investigation. It should also be noted that in blow-sand areas, sand can accumulate quickly behind windbreaks. Consequently, materials can be buried out of view by natural wind-blown sand in a relatively short period of time under favorable conditions.

The services performed by Earth Systems have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the site vicinity. No warranty, express or implied, is offered.

2.0 GENERAL SITE INFORMATION

2.1 Size, Location, and Name

The site consists of eleven legal parcels totaling approximately 141 acres located west of Landau Boulevard and north of Verona Road in Cathedral City, Riverside County, California. The site is known as Verano Development. The site location is depicted in Figure 1. The site layout is depicted in Figure 2.

2.2 Assessor's Parcel Number(s)

The site is identified as the following Assessor's Parcel Numbers [APNs] (for ease of reference to Earth Systems' 2022 ESA, Parcel letters assigned to each APN for that report are included in the table):

APN	2022 ESA Parcel Letter	**APN**	2022 ESA Parcel Letter
677-050-015	C3	**677-050-027**	E
677-050-016	D	**677-050-029**	I
677-050-017	C2	**677-050-031**	F1
677-050-018	C1	**677-050-032**	F2
677-050-023	B	**677-050-033**	F3
		677-050-034	F4

The included parcels are detailed in Exhibit A attachment provided by the client (Appendix D). Copies of the Assessor's Parcel Maps and of the reports from the Riverside County Assessor-County Clerk-Recorder website are included in Appendix D.

2.3 Township, Range, Section

The site is located in the north half of Section 5, Township 4 South, Range 5 East.

2.4 Site Boundaries

Portions of the property boundaries are defined by paved or graded roadways, and the west boundary of the site is defined by a levee. Otherwise, boundaries were estimated based on the RCIT map with aerial photo, which depicts APN boundaries.

2.5 Current Development and Access

The site is currently rough graded or undeveloped land accessed via locked gates from Verona Road parallel to the south boundary, and Rio Pecos Drive roughly parallel to the southeast boundary.

2.6 Zoning/Land Use Records

Zoning/Land Use information was obtained from the City of Cathedral City Planning Department website, which indicated that the property usage is designated as shown below:

APN	Zoning Designation/Land Use Type
677-050-015	Planned Community Commercial [PCC]
677-050-016	
677-050-017	Multiple Family Residence [R3]
677-050-018	
677-050-023	Residential Estate [RE]
677-050-027	
677-050-031	
677-050-032	
677-050-033	
677-050-034	
677-050-029	Vacant land - Predominate Residential Use

2.7 Site Topography

The surface of the site slopes to the southeast at a slight angle. The elevation of the site ranges from about 437 feet above mean sea level in the southeast corner (Rio Pecos Drive) to about 488 feet above mean sea level in the northwest corner.

2.8 Surface Water Bodies

Surface water bodies are not present on the site, either as lakes or streams. A portion of the Morongo Wash once crossed the site in the north half of Section 5 but a levee was constructed across the northwest end of the Wash to divert surface water southward to the main Whitewater River channel approximately 1 mile southwest of the subject site. Rainwater appears to infiltrate

within the site. Water bodies are not located in a position to transport contaminants onto the site or be readily affected by contaminants released at the site.

2.9 Geology and Hydrogeology

The site is located in the Coachella Valley of Southern California. The Coachella Valley is part of the tectonically active Salton Trough, which is a closed, internally draining basin bound by the San Jacinto and Santa Rosa Mountains to the southwest; the San Bernardino Mountains to the northwest; and the Little San Bernardino and Orocopia Mountains to the northeast and east. These mountain ranges, and the basement rock underlying the Coachella Valley, are primarily composed of granitic and metamorphic rock. Within the Coachella Valley, the basement complex is overlain by a series of unconsolidated and semi-consolidated continental clastic sediments eroded from the surrounding mountain ranges; lacustrine deposits of ancient Lake Cahuilla; and wind-blown sand deposited in the active blow-sand area of Riverside County (DWR, 1964). The site is located on continental clastic sediments (overlain by aeolian deposits) eroded from the mountains north and northeast of the site.

The northwest trending San Andreas fault zone is the major geologic feature of the Coachella Valley. The Banning, Mission Creek, and Garnet Hill faults, which are part of the San Andreas fault system, divide the Coachella Valley into four distinct hydrogeologic subbasins. Each subbasin is further divided into subareas, based on either the type of water-bearing formation, water quality, areas of confined groundwater, forebay areas, groundwater divides, or surface water divides. The site is located within the Palm Springs subarea of the Indio subbasin. This subarea is bounded by the Garnet Hill fault to the northeast, the San Jacinto and Santa Rosa Mountains to the west and south, and the adjacent Thermal subarea of the Indio subbasin to the east. Groundwater in this subarea generally flows in a southeasterly direction toward the Salton Sea from the main recharge areas along the base of the San Jacinto Mountains and near the San Gorgonio Pass. The alluvial materials within this subarea are primarily heterogeneous alluvial fan deposits exhibiting little sorting and with a low percentage of fine-grained material. The transmissivity (a measure of the capability of an aquifer to transmit water) of the aquifer in the Indio subbasin was calculated in two wells to be 60,000 to 250,000 gallons per day per foot-width of aquifer, which is relatively high (DWR, 1964).

The depth to groundwater at the site was evaluated via data available on the California Statewide Groundwater Elevation Monitoring System [CASGEM] database. Groundwater elevation in a CASGEM well (ID: 49816) located approximately 2.5 miles west-northwest of the site and at a ground surface elevation of 550 feet, was -314.97 feet on October 11, 2021; and -306.13 feet on April 22, 2022.

3.0 SITE RECONNAISSANCE

3.1 Onsite Observations

Earth Systems personnel visited the site on May 2, 2023, to observe current site conditions and adjacent land use. Photographs of selected onsite features are presented in Appendix B. Observations from the site visit are as follows:

3.1.1 Overall site conditions

- Site conditions were very similar to the 2022 Phase I site visit. Several of the trash items identified in 2022 have been subsequently cleaned up.
- The "imported soils" identified at the time of the 2022 ESA appeared to have been associated with what was called "the staging area," where equipment was stored during the buildout on the west side of site. The staging area was cleared this time and the piles were gone.
- The site is undeveloped sandy ground surrounding a developed community. Except for Tamarisk trees parallel to the northeast and west boundaries of the site, vegetation consisted of small mounds of native desert brush. The vegetation showed no sign of stress except for the lack of water.
- Access to the site was limited to paved roads (Landau Boulevard, Verona Road, and Rio Pecos Road) associated with the residential development in the immediate vicinity. Fencing blocked direct access to the site, except where the fencing was breached, or gates were opened.
- Evidence was not seen of hazardous trash, such as drums, fuel tanks, oil products, batteries, or other potentially hazardous materials.

3.1.2 Individual APNs

- APN 677-050-015:
  - Narrow parcel mostly covered with blow sand (Photo 1).
- APN 677-050-016:
  - Small walled parcel covered with blow sand (Photo 2).
- APN 677-050-017):
  - Fenced area has old mulch that is sand covered (Photo 5).
  - North of fenced area small piles of asphalt and rock debris (Photo 6). Hazardous materials were not observed in the debris piles.
- APN 677-050-018:
  - Along southern portions of parcel are areas of debris mostly where it was found in 2022. There were minor construction debris (concrete, rocks, etc.), small piles of asphalt, old mulch piles and old wooden-wire fencing (Photos 3-5).
- APN 677-050-023:
  - Minor asphalt and concrete piles, and trash and tires at northwest corner of lot. All nonhazardous (Photo 6). Minor domestic debris associated with Verona Road and Landau Boulevard.

- Fenced retention basin at east side of lot and small fenced basin at northwest corner of lot maintained and free of trash.

- APN 677-050-027:
  - Minor amounts of rocks and asphalt (Photo 7). Large length metal pipe (Photo 8). All nonhazardous.
- APN 677-050-029:
  - Narrow parcel on west side of site. Mainly sand dunes against the Tamarisk trees on west side of parcel (Photo 9).
- APN 677-050-031:
  - Minor nonhazardous windblown and domestic trash along Verona Road (Photo 10).
  - Scattered dumped tires at southwest corner of parcel.
- APN 677-050-032:
  - The staging area noted at the time of the 2022 ESA had been cleared (Photo 11).
  - Minor trash and dumped tires were at the west corner of parcel. Similar locations are in the 2022 report.
  - Discarded fencing was near the center of the south boundary of the APN (Photo 12).
- APN 677-050-033:
  - Mainly clear though some minor non-hazardous trash.
- APN 677-050-034:
  - Mostly clear and covered with blow sand. Wall at northeast corner of site.

Evidence of the onsite use, storage, or disposal of hazardous materials was not observed.

3.2 Site Vicinity Observations

The site vicinity generally consisted of undeveloped and residential properties. Properties adjacent to the site consisted of the following:

Parcel	North	Northeast	East	South	West
677-050-015 and -016	Undeveloped land; Southern Pacific railroad	Undeveloped land; Southern Pacific railroad	Walled complex likely for utilities.	Undeveloped land	Undeveloped land
677-050-017 and -018	Undeveloped land	Walled complex likely for utilities.	Undeveloped land	Residential	Undeveloped land

677-050-023	Community building; residential	Undeveloped land beyond Rio Vista Drive	Undeveloped land beyond Rio Vista Drive	Residential	Park
677-050-027	Undeveloped land	Undeveloped land	Undeveloped land	Residential	Undeveloped land
677-050-029	Undeveloped land	Undeveloped land	Undeveloped land	Residential	Levee
677-050-031	Undeveloped land	Residential	Residential	Residential	Undeveloped land
677-050-032 and -033	Undeveloped land	Residential	Residential	Undeveloped land	Undeveloped land
677-050-034	Undeveloped land	Undeveloped land	Undeveloped land, residential	Undeveloped land	Undeveloped land

Evidence was not observed that the site was adversely affected by activities on properties in the site vicinity.

4.0 HISTORICAL INFORMATION

Information regarding the history of the site was obtained from various sources, as listed in the references section of this report.

4.1 Prior Reports

Earth Systems conducted for the site a Phase I Environmental Site Assessment (Earth Systems, 2013), a Phase I Environmental Site Assessment Update (Earth Systems, 2014), and a second ESA (Earth Systems, 2022). In general, these investigations did not find evidence that the site was adversely affected by activities in the site vicinity; the site was not identified in the agency database reviews; and the sites in the site vicinity did not appear to pose a risk to the subject site based on the status of those sites, the distance, or direction from the subject site, or the nature of the issue(s) at those sites. RECs were not identified in the 2013 ESA or the 2014 Update, and evidence of the on-site manufacture, storage, or disposal of hazardous materials was not observed.

The 2022 ESA identified the following REC:

> "(s)everal dozen mounds of what appeared to be soil were stored on Parcel F2 by 2016 and were gone (or graded onsite) by 2020. The origin of the mounds is not known, though they could have been imported from offsite. These could be considered a REC, due to the potential for hazardous material residues (petroleum hydrocarbons, pesticides residues) to be present in the soil." Earth Systems recommended soil sampling with analysis for OCPs and petroleum hydrocarbons.

See Section 7.0 for discussion of this REC.

4.2 Additional Historical Information

Information that in some part was not included in the prior reports, but which was developed as a part of this ESA is summarized chronologically in the table below and in the following sections. Footnotes regarding the sources of historical information are provided following the table.

Table 1 – Summary of Historical Site Usage

Date	Source	Discussion
1980	ERIS aerial photo	The site and vicinity were generally unchanged as compared to the 1958 aerial photo from the 2022 ESA.
2021	ERIS aerial photo	The southeast sixth of APN 677-050-032 (former Parcel F2) appears to have a coating of dust suppressant. A staging area with vehicles and potentially a construction office were at the southeast corner of APN 677-050-032. Parcels offsite to the east of APNs APN 677-050-031, -032, 033; southeast of -034, and south of -027 and -018 were nearly fully developed for residential usage.

Historical information footnotes:

We attempted to obtain historical information from a standard set of resources, including historical aerial photographs, historical USGS topographic maps, Sanborn fire insurance maps, historical street directories, chain-of-title documents, city building permit files, and personnel interview. However, historical information was not obtained from some sources, as follows:

Sanborn Fire Insurance maps: Sanborn maps for the site and vicinity were requested from ERIS, a firm that specializes in maintaining this type of information. ERIS indicated that "no information was found for your site or adjacent properties."

Historical City Directories: Actual addresses are required to conduct searches using historical street directories. The County Assessor's reports indicate that addresses have not been assigned to the site.

Chain of Title documents: Chain of title documents were not provided prior to publication of this report and, therefore, were not reviewed.

City Building Permits were not requested because of the lack of significant development of the site.

County Assessor's Office: The reports indicate that there are no building developments for the site.

5.0 RECORDS REVIEW

5.1 Agency Database Search Report

A report summarizing the information available from regulatory agencies regarding sites that generate, store, use, and/or have released hazardous materials was obtained from a firm that specializes in maintaining a database of this type of information. The publications reviewed in the database search are referenced in the database report, presented in Appendix C. The search radii used for each list were in accordance with the US EPA AAI and ASTM E1527-13 guidelines as measured from the site boundary. Significant information obtained in the database search is summarized below.

- The site is not listed in the database report.
- Three sites listed five time were identified within the search radii and are listed in the database report as follows:

- **Shields Industries, Inc. (Map Key 1)**, located at 67265 Verona Road, on the opposite side of Verona Road from the southwest portion of the subject site, is listed in the database report as Hazardous Waste Generator [HAZGEN] on the Hazardous Waste Information System [HAZNET] database, which documents hazardous waste manifest data. The California Department of Toxic Substances Control [DTSC] monitors the HAZNET database. However, this address is for a single-family home. It is unlikely that hazardous waste is generated at this location, which may be the address for one of the company principals. No problems regarding disposal of hazardous materials are reported for the site and this is not a REC.
- **Rio Vista (Housing Development) (Map Key 2)**, located at Verona and Landau (streets), south and east of the subject site, is included in the following databases:

  - US EPA Facility Registry System [FINDS/FRS], which "identifies facilities, sites or places subject to environmental regulations or of environmental interest." Inventory Database [FID] for a UST onsite. The report cites the latitude and longitude as the intersection of Landau and Verona and the description as "General contractors-single-family houses" (Appendix D). Links in the report cite the following sources of information:

    - Air Facility System [AFS] "contains emissions, compliance and enforcement data on stationary sources of air pollution. Regulated sources cover a wide spectrum; from large industrial facilities to relatively small operations such as dry cleaners. AFS does not contain data on facilities that are solely asbestos demolition and/or renovation contractors, or landfills. ECHO Clean Air Act data from AFS are frozen and reflect data as of October 17, 2014; the EPA retired this system for Clean Air Act stationary sources and transitioned to ICIS-Air" (Appendix D). The listing was last updated August 16, 2011.

    - Integrated Compliance Information System - National Pollutant Discharge Elimination System [ICIS-NPDES] "is an information management system maintained by the Office of Compliance to track permit compliance and enforcement status of facilities regulated by the NPDES under the Clean Water Act. This data includes permit, inspection, violation and enforcement action information for applicable ICIS records" (Appendix D). The listing was last updated October 19, 2014.

  Due to the length of time since last updated and the Environmental Interest Type identified as "Air minor" these are not considered to be RECs.

- **Flat Top Mtn. Deposit (Map Key 3)**, located 0.89 mile east-northeast of the subject site, is included in the Mineral Resource Data System [MRDS] as a past producer of sand and gravel for the construction industry (Appendix D). This is not considered to be a REC.

- The database search report has three listings categorized as unmapped, due to vague address listings or the inability of the automated search system to identify the location of the release site. A review of these listings did not identify them to be within the search radii. The

unmapped site does not appear to pose a concern for the site due to the distance, direction, status, or nature of the issue at that site.

The sites identified in the agency database review do not appear to be RECs for the subject site due to the distance, direction, status, or nature of the issue at these sites.

5.2 California EPA, State Water Resources Control Board

The California Environmental Protection Agency [EPA], State Water Resources Control Board [SWRCB] GeoTracker website was accessed to research records on file regarding known problems at the site address. The database search did not find results for the site or properties in the vicinity.

5.3 California Department of Toxic Substances Control

The California Department of Toxic Substances Control [DTSC] EnviroStor website was accessed to research records on file regarding known problems at the site address or in the site vicinity. The database search did not find results for the site or properties in the vicinity.

5.4 Vapor Encroachment

ASTM E1527-13, *Standard Practice for Environmental Assessments: Phase I Environmental Assessment Process*, specifies RECs related to petroleum releases. As defined in Section 1.3, a REC is "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to a release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment."

Based on reviews of the Agency Database Search Report, Geotracker website, and Envirostor website (Sections 5.1, 5.2, 5.2), petroleum vapor encroachment from facilities offsite were not identified.

5.5 Tribal Records

This site is within ¼ mile of tribal land. Agua Caliente Band of Cahuilla Indians [ACBCI] staff was previously contacted regarding records on file for ACBCI tribal lands. ACBCI staff stated that ACBCI has signed a "memo of understanding" with the Riverside County Department of Environmental Health [RCDEH] that is included in ACBCI lease agreements, thereby holding tenants to abide by county guidelines regarding environmental issues onsite. Therefore, records on file for the site should duplicate records on file with the RCDEH.

5.6 Engineering and Institutional Controls

Engineering and Institutional Controls [EICs] (e.g., deed restrictions and restrictive zoning) were not identified for the subject site in the agency database search report. Engineering and Institutional Controls to a radius of ¼ mile were not identified.

5.7 Environmental Cleanup Liens

Recorded Environmental Cleanup Liens [ECLs] on a property are indicators that contamination exists or existed at the site. ECLs are "encumbrances on a property for the recovery of incurred cleanup costs on the part of a state, tribal, or federal government agency or other third party" (EPA 2005). In the EP's judgment, an ECL is not likely to be an issue onsite or in the vicinity due to lack of evidence that a release has occurred onsite.

5.8 California Department of Conservation, Geologic Energy Management Division

The California Department of Conservation, Geologic Energy Management Division [CalGEM] maps on the CalGEM website were reviewed for information regarding historic oil-well or geothermal drilling activities near the site. The maps and databases did not depict permitted oil or geothermal wells within 1 mile of the site.

6.0 INTERVIEWS, GENERAL RESEARCH, AND PRIOR REPORTS

6.1 Current Owners/Occupants/Operators

Mr. David DiRienzo, President and founder of UrbanWest (a real estate development and investment firm involved in 2023 planning of Verano Development), was contacted regarding his knowledge of the site. In 2022, Mr. DiRienzo and UrbanWest "created project designs" for "138 acres of residential development land within the Verano Master Planned Community in Cathedral City, California" (Linkedin, 2023). Mr. DiRienzo provided the following information:

- Mr. DiRienzo has no knowledge/suspicion of the release of hazardous materials onsite.
- He is unaware of USTs or above-ground storage tanks [ASTs] on site now or in the past.
- Mr. DiRienzo stated that there are no ECLs assigned to the site.
- The site has been consistently monitored to ward against illegal dumping.

6.2 Past Owners/Occupants/Operators

Contact information for prior owners, operators, or occupants was not readily available.

6.3 Owners/Occupants of Neighboring Properties

The US EPA recommends that interviews with persons on adjoining properties be conducted for properties that are "abandoned." The subject site is under active ownership and consistently monitored. Therefore, the site is not considered to be abandoned and interviews of owners/occupants of neighboring properties were not conducted.

7.0 SUMMARY AND CONCLUSIONS

This report presents the findings of the Phase I Environmental Site Assessment [ESA] conducted by Earth Systems Pacific [Earth Systems] for Verano Development (APNs 677-050-015, -016, -017, -018, -023, -027, -029, -031, -032, -033, and -034), located west of Landau Boulevard and north

of Verona Road in Cathedral City, Riverside County, California [the site]. We have endeavored to perform this ESA in general conformance with the scope and limitations of ASTM Practice E1527-13. Exceptions to or deletions from this practice are described in Sections 1.5 and 1.6 of this report. The purpose of this assessment was to evaluate the site for the presence of Recognized Environmental Conditions [REC] related to the current or past use, handling, storage, or disposal of hazardous materials or petroleum products on or near the subject property. This assessment has revealed no evidence of RECs in connection with this property except as discussed in the project summary presented below. Our findings and conclusions are summarized as follows:

1. The site was observed to consist of mass-graded residential lots and undeveloped native desert.

2. Construction debris, household debris, and windblown trash were noted scattered in some areas of the site. The debris onsite does not appear to contain hazardous materials and is not considered a REC. Small piles of asphalt rubble and tires are not a REC but should be removed appropriately from the site.

3. Evidence was not observed during the site visit of the presence of storage tanks, water wells, drywells, potential PCB-containing equipment (such as transformers), sumps, pits, ponds (other than an empty retention basin), lagoons, stained soil, stressed vegetation (other than due to weather), or onsite septic system.

4. Evidence of the onsite use, storage, or disposal of hazardous materials was not observed.

5. In 2022 Earth Systems recommended that soil piles on APN 677-050-032 be sampled and analyzed for potential hazardous substances. The soil piles and staging area were not in evidence at the time of this ESA site visit.

6. The site vicinity consists of residential and undeveloped properties. Evidence was not observed that the site was adversely affected by activities in the site vicinity.

7. The site was not identified in the agency database review. The sites identified in the agency database review do not appear to be RECs for the subject site due to the distance, direction, status, or nature of the issue at these sites.

8. The sites in the site vicinity do not appear to pose a risk to the subject site based on the status of those sites, the distance, or direction from the subject site, or the nature of the issue(s) at those sites.

8.0 RECOMMENDATIONS

RECs were not identified for this site. Therefore, further investigations do not appear warranted.

-o0o-

REFERENCES

Agua Caliente Band of Cahuilla Indians, 2006, Tribal Hydrogeology staff, telephone contact, November 7, 2006.

California Department of Conservation, Geologic Energy Management Division [CalGEM], https://maps.conservation.ca.gov/doggr/wellfinder/#openModal/-118.94276/37.10257/6, website accessed April 25, 2023.

_____, Department of Toxic Substances Control, EnviroStor website, http://www.envirostor.dtsc.ca.gov/public/default.asp, accessed May 1, 2023.

_____, Department of Water Resources [DWR], 1964, *Bulletin Number 108 – Coachella Valley Investigation,* July 1964.

California State Water Resources Control Board, https://geotracker.waterboards.ca.gov/, website accessed May 1, 2023.

California Statewide Groundwater Elevation Monitoring System [CASGEM], https://www.casgem.water.ca.gov, website accessed April 27, 2023.

City of Cathedral City, Planning Department, Maps, *City of Cathedral City Zoning Map*, https://www.cathedralcity.gov/home/showpublisheddocument/5350/636245721641900000, website accessed April 28, 2023.

Earth Systems, 2022, *Report of Phase I Environmental Site Assessment, APNs 677-050-039, -023, -018, -017, -015, -016, -027, -031, -032, -033, -034, -029; 660-340-010, 660-390-003, Verano Development, West of Landau Boulevard & North of Verona Road, Cathedral City, Riverside County, California*, File No.: 305289-001, Doc. No.: 22-04-706, dated April 7, 2022.

ERIS, *Database Report, Verano Development, W of Landau/North of Verona, Cathedral City, CA 92234,* Project No: 305289-002, Order No: 23042700717, dated May 1, 2023.

_____, *Fire Insurance Map, Verano Development, W of Landau/North of Verona, Cathedral City, CA 92234,* Project No: 305289-002, Order No: 23042700717, dated April 28, 2023.

_____, *Historical Aerials, Verano Development, W of Landau/North of Verona, Cathedral City, CA 92234,* Project No: 305289-002, Order No: 23042700717, dated May 2, 2023.

Google Earth, aerial photograph archives, as listed below:

Date	Source/Flight
7-4-2019	Landsat/Copernicus

Linkedin, David DiRienzo, President at UrbanWest, https://www.linkedin.com/in/david-dirienzo-59b159133, website accessed May 2, 2023.

Riverside County Information Technology, Riverside County Geographic Information Services, https://gis1.countyofriverside.us/Html5Viewer/index.html?viewer=MMC_Public website accessed April 27, 2023.

United States Environmental Protection Agency, 2013, *40 CFR Part 312, Standards and Practices for All Appropriate Inquiries, Final Rule*, dated November 13, 2013.

_____, 2020, *Tribes Approved for Treatment as a State (TAS)*, https://www.epa.gov/tribal/tribes-approved-treatment-state-tas#regulatory-and-administrative-tas, website accessed May 30, 2020.

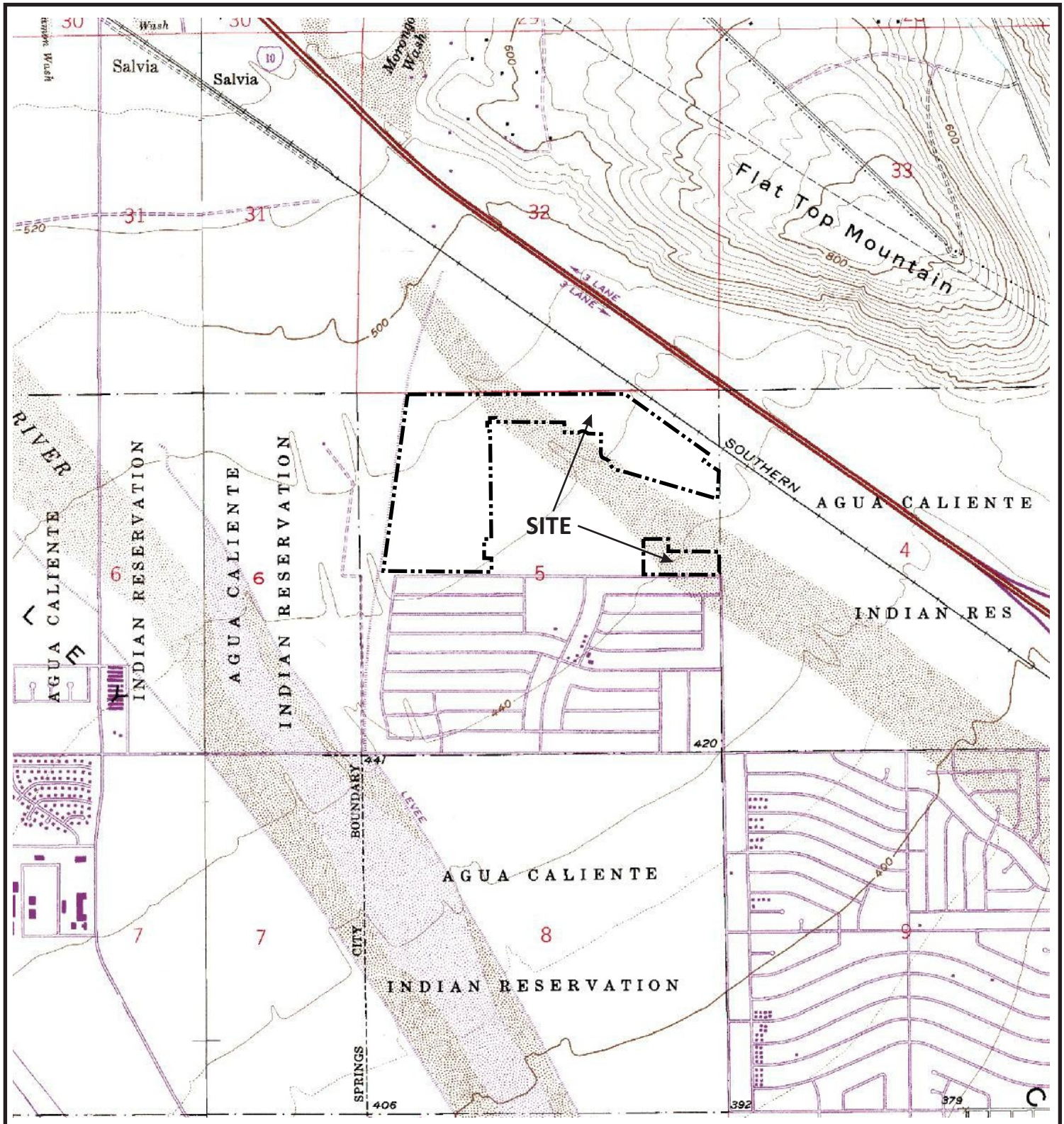
United States Geologic Survey, 7.5 minute *Cathedral City, Calif.* Quadrangle, 1958, photo-revised 1981.

_____, 7.5 minute *Palm Springs, Calif.* Quadrangle, 1957, photo-revised 1988.

UrbanWest, Mr. David A. DiRienzo, President and Founder, email contact, May 4, 2023.

Appendix A

Figures



Base Maps: USGS 7-1/2' Quadrangles, *Cathedral City, Calif.*, 1958, photo-revised 1981, and *Palm Springs, Calif., 1957*, photo-revised 1988.

LEGEND

Site Boundary

Scale: 1" = 2,000'

0 2,000' 4,000'

N

Figure 1
Site Location

Verano Development
West of Landau Boulevard & North of Verona Road
Cathedral City, Riverside County, California

Earth Systems

5/11/2023 | File No.: 305289-002

Reference: Google Earth, July 4, 2019

LEGEND

Site Boundary

APN Boundary

677-050-031 APN

Approximate Scale: 1" = 600'

0 600' 1,200'

Figure 2
Site Layout

Verano Development
West of Landau Boulevard & North of Verona Road
Cathedral City, Riverside County, California

Earth Systems

5/11/2023 | File No.: 305289-002

Appendix B

Photographs

Photo 1: 677-050-015- Looking to the west side of the parcel.

Photo 2: 677-050-016 - Nonhazardous trash at center of parcel.

Photo 3: 677-050-017 - Mulch inside fenced area.

Photo 4: 677-050-018 - Rocks and minor asphalt.

Photo 5: 677-050-018 - Old fencing.

Photo 6: 677-050-023 - Trash and tires on west side.

Photo 7: 677-050-027 - Rocks and minor asphalt.

Photo 8: 677-050-027 - Metal pipe.

Photo 9: 677-050-029 - Sand dunes against trees.

Photo 10: 677-050-031 - Domestic trash on west side.

Photo 11: 677-050-032 - Staging area noted at time of 2022 ESA had been cleared.

Photo 12: 677-050-032 - Discarded fencing.

Appendix C

Agency Database Search Report

DATABASE REPORT

Project Property:	*Verano Development* *W of Landau/North of Verona* *Cathedral City CA 92234*
Project No:	*305289-002*
Report Type:	*Database Report*
Order No:	*23042700717*
Requested by:	*Earth Systems Pacific*
Date Completed:	*May 1, 2023*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

Table of Contents

Executive Summary

Property Information:

Project Property:		*Verano Development* *W of Landau/North of Verona Cathedral City CA 92234*
Project No:		*305289-002*
Coordinates:		
	Latitude:	*33.85610265*
	Longitude:	*-116.48547605*
	UTM Northing:	*3,746,320.17*
	UTM Easting:	*547,595.39*
	UTM Zone:	*11S*
Elevation:		*469 FT*

Order Information:

Order No:	*23042700717*
Date Requested:	*April 27, 2023*
Requested by:	*Earth Systems Pacific*
Report Type:	*Database Report*

Historicals/Products:

Aerial Photographs	*Historical Aerials (with Project Boundaries)*
ERIS Xplorer	*ERIS Xplorer*
Excel Add-On	*Excel Add-On*
Fire Insurance Maps	*US Fire Insurance Maps*

Executive Summary: Report Summary

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
Standard Environmental Records								
Federal								
NPL	Y	1	0	0	0	0	0	0
PROPOSED NPL	Y	1	0	0	0	0	0	0
DELETED NPL	Y	0.5	0	0	0	0	-	0
SEMS	Y	0.5	0	0	0	0	-	0
ODI	Y	0.5	0	0	0	0	-	0
SEMS ARCHIVE	Y	0.5	0	0	0	0	-	0
CERCLIS	Y	0.5	0	0	0	0	-	0
IODI	Y	0.5	0	0	0	0	-	0
CERCLIS NFRAP	Y	0.5	0	0	0	0	-	0
CERCLIS LIENS	Y	PO	0	-	-	-	-	0
RCRA CORRACTS	Y	1	0	0	0	0	0	0
RCRA TSD	Y	0.5	0	0	0	0	-	0
RCRA LQG	Y	0.25	0	0	0	-	-	0
RCRA SQG	Y	0.25	0	0	0	-	-	0
RCRA VSQG	Y	0.25	0	0	0	-	-	0
RCRA NON GEN	Y	0.25	0	0	0	-	-	0
RCRA CONTROLS	Y	0.5	0	0	0	0	-	0
FED ENG	Y	0.5	0	0	0	0	-	0
FED INST	Y	0.5	0	0	0	0	-	0
LUCIS	Y	0.5	0	0	0	0	-	0
NPL IC	Y	0.5	0	0	0	0	-	0
ERNS 1982 TO 1986	Y	PO	0	-	-	-	-	0
ERNS 1987 TO 1989	Y	PO	0	-	-	-	-	0
ERNS	Y	PO	0	-	-	-	-	0
FED BROWNFIELDS	Y	0.5	0	0	0	0	-	0
FEMA UST	Y	0.25	0	0	0	-	-	0
FRP	Y	0.25	0	0	0	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
DELISTED FRP	Y	0.25	0	0	0	-	-	0
HIST GAS STATIONS	Y	0.25	0	0	0	-	-	0
REFN	Y	0.25	0	0	0	-	-	0
BULK TERMINAL	Y	0.25	0	0	0	-	-	0
SEMS LIEN	Y	PO	0	-	-	-	-	0
SUPERFUND ROD	Y	1	0	0	0	0	0	0
DOE FUSRAP	Y	1	0	0	0	0	0	0
State								
RESPONSE	Y	1	0	0	0	0	0	0
ENVIROSTOR	Y	1	0	0	0	0	0	0
DELISTED ENVS	Y	1	0	0	0	0	0	0
SWF/LF	Y	0.5	0	0	0	0	-	0
SWRCB SWF	Y	0.5	0	0	0	0	-	0
WMUD	Y	0.5	0	0	0	0	-	0
HWP	Y	1	0	0	0	0	0	0
SWAT	Y	0.5	0	0	0	0	-	0
C&D DEBRIS RECY	Y	0.5	0	0	0	0	-	0
RECYCLING	Y	0.5	0	0	0	0	-	0
PROCESSORS	Y	0.5	0	0	0	0	-	0
CONTAINER RECY	Y	0.5	0	0	0	0	-	0
LDS	Y	0.5	0	0	0	0	-	0
LUST	Y	0.5	0	0	0	0	-	0
DELISTED LST	Y	0.5	0	0	0	0	-	0
UST	Y	0.25	0	0	0	-	-	0
UST CLOSURE	Y	0.5	0	0	0	0	-	0
HHSS	Y	0.25	0	0	0	-	-	0
UST SWEEPS	Y	0.25	0	0	0	-	-	0
AST	Y	0.25	0	0	0	-	-	0
AST SWRCB	Y	0.25	0	0	0	-	-	0
TANK OIL GAS	Y	0.25	0	0	0	-	-	0
DELISTED TNK	Y	0.25	0	0	0	-	-	0
CERS TANK	Y	0.25	0	0	0	-	-	0
DELISTED CTNK	Y	0.25	0	0	0	-	-	0
HIST TANK	Y	0.25	0	0	0	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
LUR	Y	0.5	0	0	0	0	-	0
CALSITES	Y	0.5	0	0	0	0	-	0
HLUR	Y	0.5	0	0	0	0	-	0
DEED	Y	0.5	0	0	0	0	-	0
VCP	Y	0.5	0	0	0	0	-	0
CLEANUP SITES	Y	0.5	0	0	0	0	-	0
DELISTED CLEANUP	Y	0.5	0	0	0	0	-	0
DELISTED COUNTY	Y	0.25	0	0	0	-	-	0
Tribal								
INDIAN LUST	Y	0.5	0	0	0	0	-	0
INDIAN UST	Y	0.25	0	0	0	-	-	0
DELISTED INDIAN LST	Y	0.5	0	0	0	0	-	0
DELISTED INDIAN UST	Y	0.25	0	0	0	-	-	0
County								
LOP RIVERSIDE	Y	0.5	0	0	0	0	-	0
UST RIVERSIDE	Y	0.25	0	0	0	-	-	0
Additional Environmental Records								
Federal								
FINDS/FRS	Y	PO	0	**1**	-	-	-	**1**
TRIS	Y	PO	0	-	-	-	-	0
PFAS NPL	Y	0.5	0	0	0	0	-	0
PFAS FED SITES	Y	0.5	0	0	0	0	-	0
PFAS SSEHRI	Y	0.5	0	0	0	0	-	0
ERNS PFAS	Y	0.5	0	0	0	0	-	0
PFAS NPDES	Y	0.5	0	0	0	0	-	0
PFAS TRI	Y	0.5	0	0	0	0	-	0
PFAS WATER	Y	0.5	0	0	0	0	-	0
PFAS TSCA	Y	0.5	0	0	0	0	-	0
PFAS E-MANIFEST	Y	0.5	0	0	0	0	-	0
HMIRS	Y	0.125	0	0	-	-	-	0
NCDL	Y	0.125	0	0	-	-	-	0
TSCA	Y	0.125	0	0	-	-	-	0
HIST TSCA	Y	0.125	0	0	-	-	-	0
FTTS ADMIN	Y	PO	0	-	-	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
FTTS INSP	Y	PO	0	-	-	-	-	0
PRP	Y	PO	0	-	-	-	-	0
SCRD DRYCLEANER	Y	0.5	0	0	0	0	-	0
ICIS	Y	PO	0	**1**	-	-	-	**1**
FED DRYCLEANERS	Y	0.25	0	0	0	-	-	0
DELISTED FED DRY	Y	0.25	0	0	0	-	-	0
FUDS	Y	1	0	0	0	0	0	0
FUDS MRS	Y	1	0	0	0	0	0	0
FORMER NIKE	Y	1	0	0	0	0	0	0
PIPELINE INCIDENT	Y	PO	0	-	-	-	-	0
MLTS	Y	PO	0	-	-	-	-	0
HIST MLTS	Y	PO	0	-	-	-	-	0
MINES	Y	0.25	0	0	0	-	-	0
SMCRA	Y	1	0	0	0	0	0	0
MRDS	Y	1	0	0	0	0	**1**	**1**
LM SITES	Y	1	0	0	0	0	0	0
ALT FUELS	Y	0.25	0	0	0	-	-	0
CONSENT DECREES	Y	0.25	0	0	0	-	-	0
AFS	Y	PO	0	**1**	-	-	-	**1**
SSTS	Y	0.25	0	0	0	-	-	0
PCBT	Y	0.5	0	0	0	0	-	0
PCB	Y	0.5	0	0	0	0	-	0
State								
PFAS SAMPLING	Y	0.5	0	0	0	0	-	0
DRYCLEANERS	Y	0.25	0	0	0	-	-	0
DELISTED DRYCLEANERS	Y	0.25	0	0	0	-	-	0
DRYC GRANT	Y	0.25	0	0	0	-	-	0
PFAS	Y	0.5	0	0	0	0	-	0
PFAS GW	Y	0.5	0	0	0	0	-	0
HWSS CLEANUP	Y	0.5	0	0	0	0	-	0
TOXIC PITS	Y	1	0	0	0	0	0	0
DTSC HWF	Y	0.5	0	0	0	0	-	0
INSP COMP ENF	Y	1	0	0	0	0	0	0
SCH	Y	1	0	0	0	0	0	0
CHMIRS	Y	PO	0	-	-	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
HIST CHMIRS	Y	PO	0	-	-	-	-	0
HAZNET	Y	PO	0	-	-	-	-	0
HAZ GEN	Y	PO	0	**1**	-	-	-	**1**
HAZ TSD	Y	0.5	0	0	0	0	-	0
HIST MANIFEST	Y	PO	0	-	-	-	-	0
HW TRANSPORT	Y	0.125	0	0	-	-	-	0
WASTE TIRE	Y	PO	0	-	-	-	-	0
MEDICAL WASTE	Y	0.25	0	0	0	-	-	0
HIST CORTESE	Y	0.5	0	0	0	0	-	0
CDO/CAO	Y	0.5	0	0	0	0	-	0
CERS HAZ	Y	0.125	0	0	-	-	-	0
DELISTED HAZ	Y	0.5	0	0	0	0	-	0
GEOTRACKER	Y	0.125	0	0	-	-	-	0
MINE	Y	1	0	0	0	0	0	0
LIEN	Y	PO	0	-	-	-	-	0
WASTE DISCHG	Y	0.25	0	0	0	-	-	0
EMISSIONS	Y	0.25	0	0	0	-	-	0
CDL	Y	0.125	0	0	-	-	-	0
Tribal	***No Tribal additional environmental record sources available for this State.***							
County								
HWG RIVERSIDE	Y	0.125	0	0	-	-	-	0
HZH RIVERSIDE	Y	0.125	0	0	-	-	-	0
MED WST RIVERSIDE	Y	0.25	0	0	0	-	-	0
RMP RIVERSIDE	Y	PO	0	-	-	-	-	0
	Total:		0	**4**	0	0	**1**	**5**

**** PO – Property Only***
**** 'Property and adjoining properties' database search radii are set at 0.25 miles.***

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number

No records found in the selected databases for the project property.

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
1	HAZ GEN	SHIELDS INDUSTRIES INC	67265 VERONA RD CATHEDRAL CITY CA 922340000	SW	0.00 / 19.25	-6	18
2	FINDS/FRS	RIO VISTA (HOUSING DEVELOPMENT)	VERONA AND LANDAU STREETS CATHEDRAL CITY CA 92234 ***Registry ID:*** 110014324089	ESE	0.02 / 90.79	-32	18
2	ICIS	RIO VISTA (HOUSING DEVELOPMENT)	VERONA AND LANDAU STREETS CATHEDRAL CITY CA 92270 ***Registry ID:*** 110014324089	ESE	0.02 / 90.79	-32	18
2	AFS	RIO VISTA (HOUSING DEVELOPMENT)	VERONA AND LANDAU STREETS CATHEDRAL CITY CA 92270	ESE	0.02 / 90.79	-32	19
3	MRDS	FLAT TOP MTN. DEPOSIT	RIVERSIDE COUNTY CATHEDRAL CITY CA 92234 ***Dep ID:*** 10115745	ENE	0.89 / 4,715.30	298	20

Executive Summary: Summary by Data Source

Non Standard

Federal

FINDS/FRS - Facility Registry Service/Facility Index

A search of the FINDS/FRS database, dated Aug 18, 2022 has found that there are 1 FINDS/FRS site(s) within approximately 0.02 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
RIO VISTA (HOUSING DEVELOPMENT)	VERONA AND LANDAU STREETS CATHEDRAL CITY CA 92234 ***Registry ID**: 110014324089*	ESE	0.02 / 90.79	2

ICIS - Integrated Compliance Information System (ICIS)

A search of the ICIS database, dated Oct 15, 2022 has found that there are 1 ICIS site(s) within approximately 0.02 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
RIO VISTA (HOUSING DEVELOPMENT)	VERONA AND LANDAU STREETS CATHEDRAL CITY CA 92270 ***Registry ID**: 110014324089*	ESE	0.02 / 90.79	2

MRDS - Mineral Resource Data System

A search of the MRDS database, dated Mar 15, 2016 has found that there are 1 MRDS site(s) within approximately 1.00 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
FLAT TOP MTN. DEPOSIT	RIVERSIDE COUNTY CATHEDRAL CITY CA 92234 ***Dep ID**: 10115745*	ENE	0.89 / 4,715.30	3

AFS - Air Facility System

A search of the AFS database, dated Oct 17, 2014 has found that there are 1 AFS site(s) within approximately 0.02 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
RIO VISTA (HOUSING DEVELOPMENT)	VERONA AND LANDAU STREETS CATHEDRAL CITY CA 92270	ESE	0.02 / 90.79	2

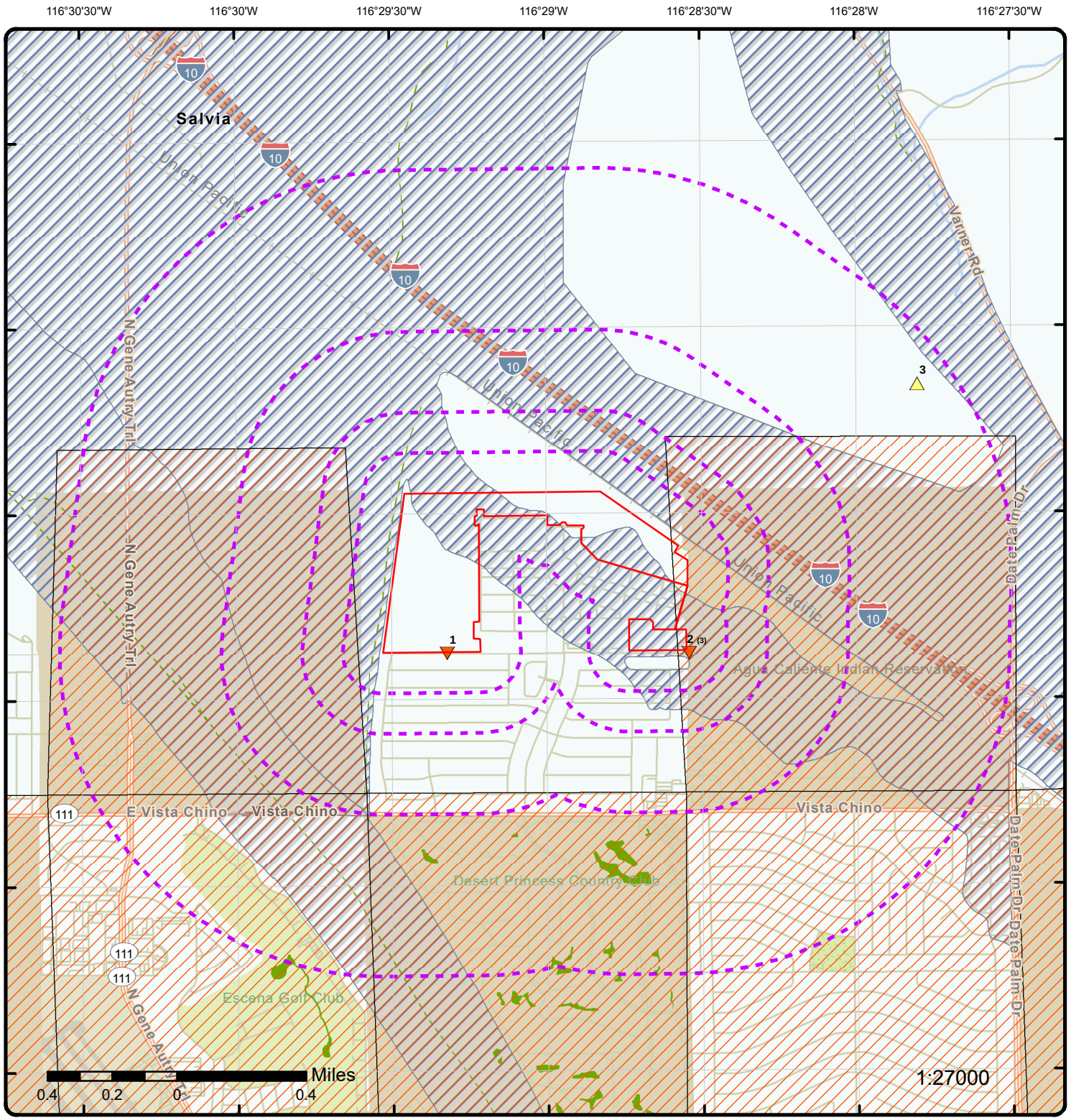
State

HAZ GEN - Generators from Hazardous Waste Manifest Data

A search of the HAZ GEN database, dated Dec 31, 2017 has found that there are 1 HAZ GEN site(s) within approximately 0.02 miles of

the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
SHIELDS INDUSTRIES INC	67265 VERONA RD CATHEDRAL CITY CA 922340000	SW	0.00 / 19.25	1



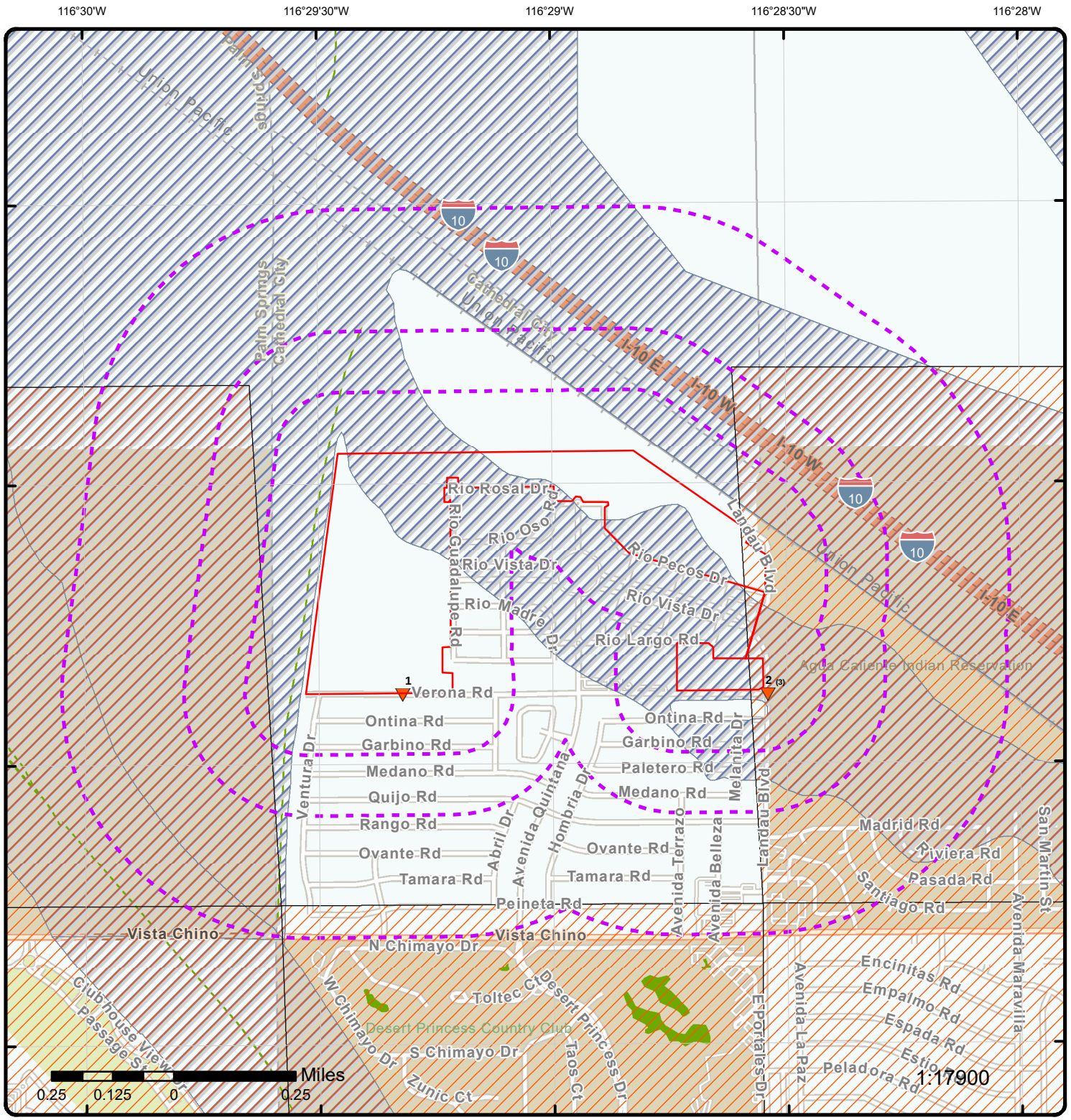
Map: 1.0 Mile Radius

Order Number: 23042700717

Address: W of Landau/North of Verona, Cathedral City, CA

ERIS

- Project Property
- Buffer Outline
- Sites with Higher Elevation
- Sites with Same Elevation
- Sites with Lower Elevation
- Sites with Unknown Elevation
- Areas with Higher Elevation
- Areas with Same Elevation
- Areas with Lower Elevation
- Areas with Unknown Elevation
- Freeways; Highways
- Traffic Circle; Ramp
- Major & Minor Arterial
- Traffic Circle; Ramp
- Local Road
- Rail
- State
- Country
- National Wetland
- Indian Reserve Land
- Plume
- 100 Year Flood Zone
- 500 Year Flood Zone
- FWS Special Designation Areas
- National Priorities List (Active, Delisted, Proposed, Institutional Control)



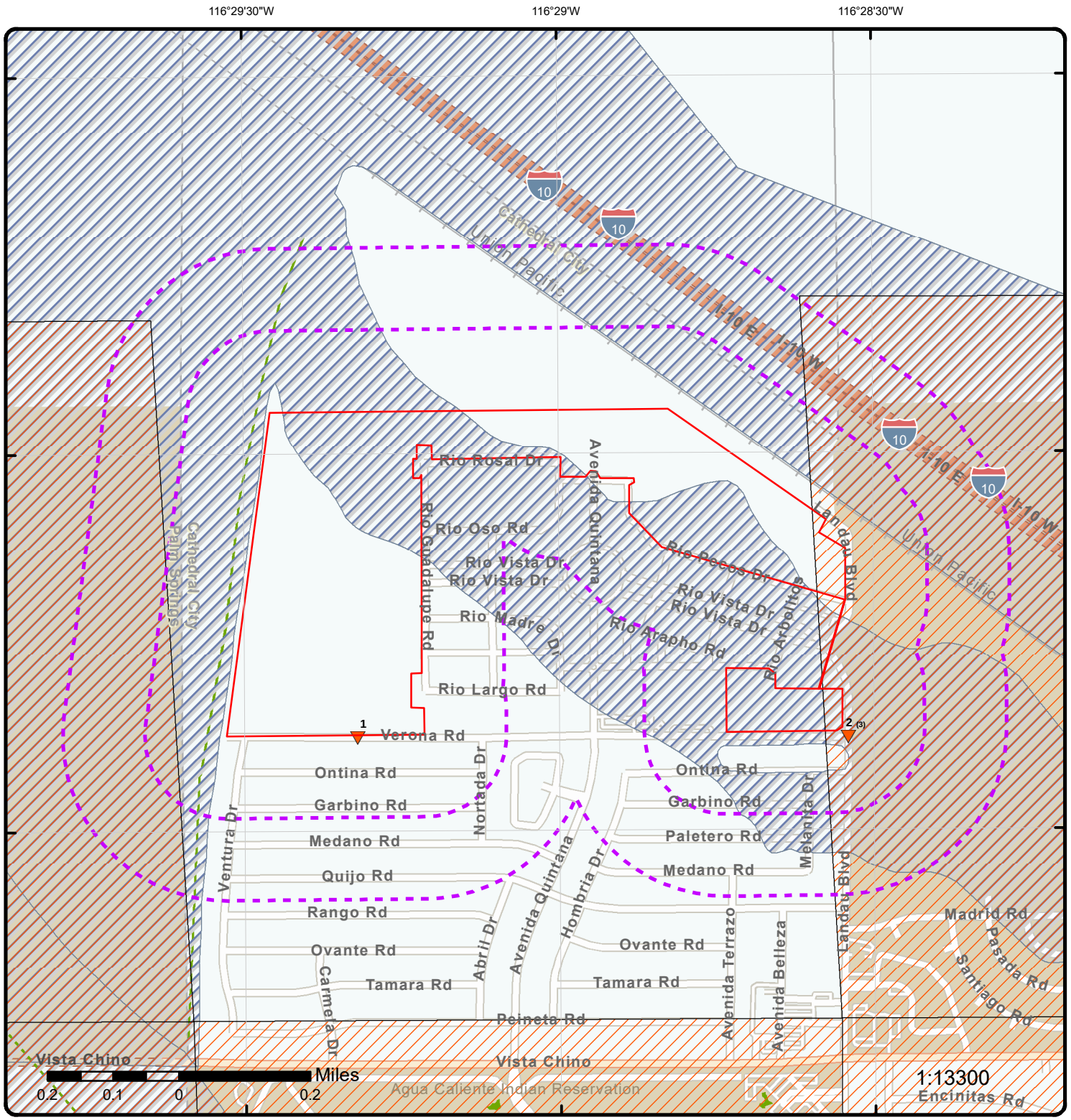
Map: 0.5 Mile Radius

Order Number: 23042700717

Address: W of Landau/North of Verona, Cathedral City, CA

ERIS

- Project Property
- Buffer Outline
- Sites with Higher Elevation
- Sites with Same Elevation
- Sites with Lower Elevation
- Sites with Unknown Elevation
- Areas with Higher Elevation
- Areas with Same Elevation
- Areas with Lower Elevation
- Areas with Unknown Elevation
- Freeways; Highways
- Traffic Circle; Ramp
- Major & Minor Arterial
- Traffic Circle; Ramp
- Local Road
- Rail
- State
- Country
- National Wetland
- Indian Reserve Land
- Plume
- 100 Year Flood Zone
- 500 Year Flood Zone
- FWS Special Designation Areas
- National Priorities List (Active, Delisted, Proposed, Institutional Control)



Map: 0.25 Mile Radius

Order Number: 23042700717

Address: W of Landau/North of Verona, Cathedral City, CA

ERIS

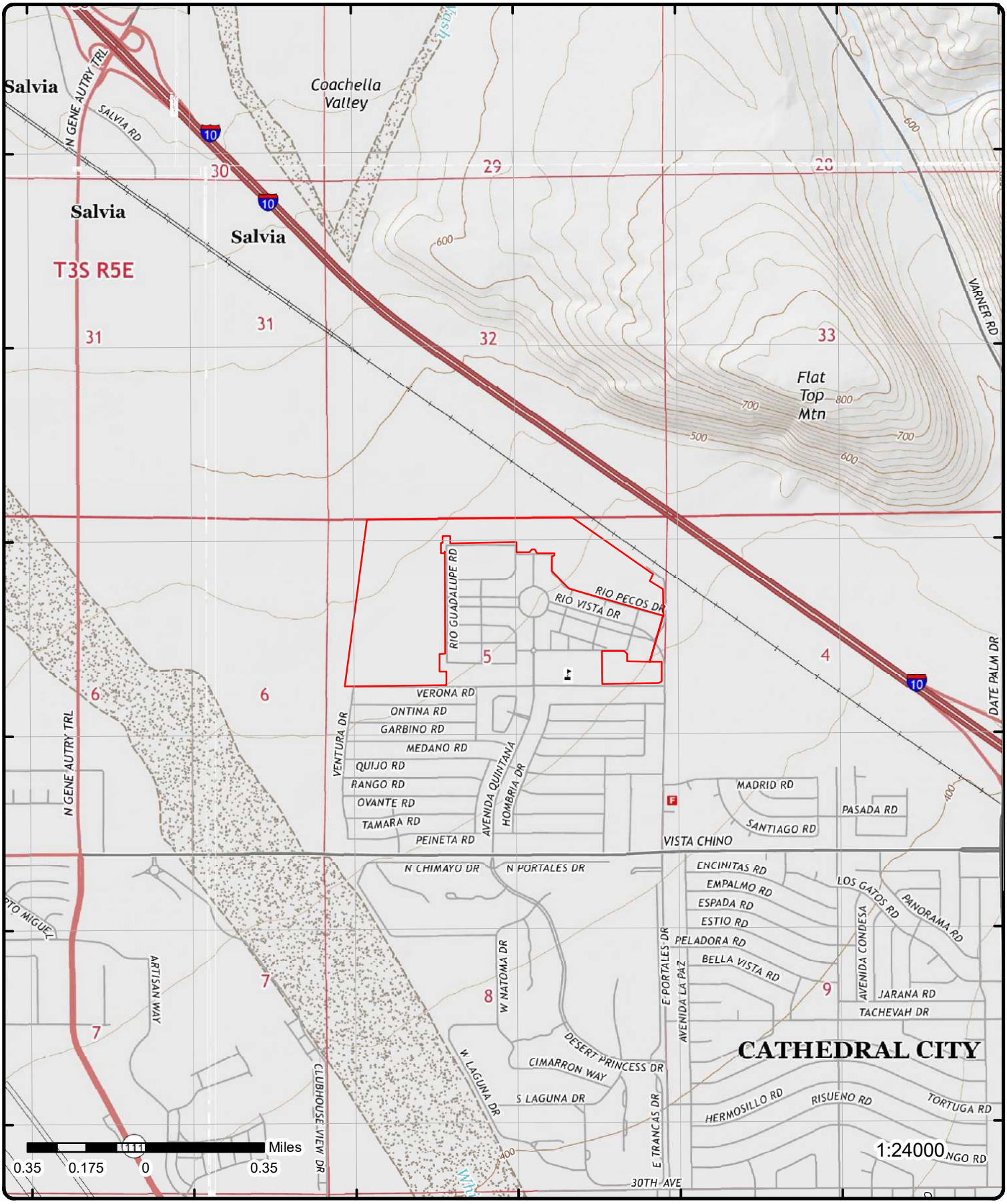
- Project Property
- Buffer Outline
- Sites with Higher Elevation
- Sites with Same Elevation
- Sites with Lower Elevation
- Sites with Unknown Elevation
- Areas with Higher Elevation
- Areas with Same Elevation
- Areas with Lower Elevation
- Areas with Unknown Elevation
- Freeways; Highways
- Traffic Circle; Ramp
- Major & Minor Arterial
- Traffic Circle; Ramp
- Local Road
- Rail
- State
- Country
- National Wetland
- Indian Reserve Land
- Plume
- 100 Year Flood Zone
- 500 Year Flood Zone
- FWS Special Designation Areas
- National Priorities List (Active, Delisted, Proposed, Institutional Control)

Aerial Year: 2021

Order Number: 23042700717

Address: W of Landau/North of Verona, Cathedral City, CA

Source: ESRI World Imagery



Topographic Map

Year: 2015

Order Number: 23042700717

Address: W of Landau/North of Verona, CA

Quadrangle(s): Cathedral City, CA; Desert Hot Springs, CA; Seven Palms Valley, CA; Palm Springs, CA

Source: USGS Topographic Map

Detail Report

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
1	1 of 1	SW	0.00 / 19.25	463.52 / -6	SHIELDS INDUSTRIES INC 67265 VERONA RD CATHEDRAL CITY CA 922340000	HAZ GEN

Epa ID: CAC001218504
Facility County: 33
Address 2:
County: Riverside
Details DTSC HWTS: The Department of Toxic Substances Control (DTSC) makes available a Waste Code Matrix showing each Waste Code, its description, and annual amounts in its Hazardous Waste Tracking System: https://hwts.dtsc.ca.gov/search
Handler Profile URL: https://hwts.dtsc.ca.gov/facility/CAC001218504

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
2	1 of 3	ESE	0.02 / 90.79	436.77 / -32	RIO VISTA (HOUSING DEVELOPMENT) VERONA AND LANDAU STREETS CATHEDRAL CITY CA 92234	FINDS/FRS

Registry ID: 110014324089
FIPS Code: CA065
HUC Code: 18100200
Site Type Name: STATIONARY
Location Description: HOUSING DEVELOPMENT
Supplemental Location:
Create Date: 25-APR-03
Update Date: 30-MAY-18
Interest Types: AIR MINOR
SIC Codes: 1521
SIC Code Descriptions: GENERAL CONTRACTORS-SINGLE-FAMILY HOUSES
NAICS Codes: 236115
NAICS Code Descriptions: NEW SINGLE-FAMILY HOUSING CONSTRUCTION (EXCEPT OPERATIVE BUILDERS).
Conveyor: ICIS
Federal Facility Code:
Federal Agency Name:
Tribal Land Code:
Tribal Land Name:
Congressional Dist No: 45
Census Block Code: 060650449041051
EPA Region Code: 09
County Name: RIVERSIDE
US/Mexico Border Ind:
Latitude: 33.85203
Longitude: -116.4757
Reference Point:
Coord Collection Method:
Accuracy Value: 100
Datum: NAD83
Source:
Facility Detail Rprt URL: https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110014324089
Data Source: Facility Registry Service - Single File
Program Acronyms:

AIR:0900000006065R9835, AIRS/AFS:06065R9835

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
2	2 of 3	ESE	0.02 / 90.79	436.77 / -32	RIO VISTA (HOUSING DEVELOPMENT) VERONA AND LANDAU STREETS CATHEDRAL CITY CA 92270	ICIS

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

EPA Region:	09	**Federal Fac ID:**	
Registry ID:	110014324089	**Tribal Land Code:**	
Pgm Sys ID:	0900000006065R9835	**County:**	Riverside
Pgm Sys Acrnm:	AIR	**Latitude 83:**	33.85203
Permit Type:		**Longitude 83:**	-116.4757

2 | **3 of 3** | **ESE** | **0.02 / 90.79** | **436.77 / -32** | **RIO VISTA (HOUSING DEVELOPMENT)**
VERONA AND LANDAU STREETS
CATHEDRAL CITY CA 92270 | **AFS**

Afs ID:	06065R9835	**Fed Reportable:**	No
Plant ID:	1014649	**Current Hpv:**	
Epa Region:	09	**Loc Contrl Region:**	99
Plant County:	Riverside	**Afs Gov Fac Code:**	0
State No:	06	**Operating Status:**	O
Primary Sic Code:	1521	**Epa Class Code:**	B
Secondary Sic Code:		**Epa Complian Stat:**	3
Naics Code:	236115	**State Comp Status:**	3

Afs Gov Facility Des: PRIVATELY OWNED/OPERATED
Operating Status Def: Operating
Epa Classification Des: Potential uncontrolled emissions <100 tons/year
Epa Compliance Status: In Compliance - Inspection
State Compliance Status: In Compliance - Inspection

Actions

Plant ID:	1014649	**National Actn Type:**	FE
Anu1:	1	**All Air Prog Codes:**	0
Date Achieved:	20030409	**Result Code:**	25
Penalty Amount:	0	**Pollutant Code:**	PM10
Record Updated Dt:	20030415	**Violating Poll Cds:**	
Creation Date:		**Violation Type Cds:**	
Key Action No:			
Regional Data Element:			

National Action Desc: EPA FCE/ON-SITE
All Air Program Def: 0-SIP Source
Result Def:
Pollutant Def: Particulate Matter < 10 Um
All Violating Poll Def:
All Violation Type Def:

Historical Compliance - Air Program Level

Air Program Code: 0
Air Program Code Ref: SIP Source
Historical Compliance Date: 0604, 0701, 0702, 0703, 0704, 0801, 0802, 0803, 0804, 0901, 0902, 0903, 0904, 1001, 1002, 1003, 1004, 1101, 1102, 1103, 1104, 1201, 1202, 1203, 1204, 1301, 1302, 1303, 1304, 1401, 1402, 1403
Historical Compliance Status: 3
Historical Compliance Stat Ref: In Compliance - Inspection

Air Program

Plant ID:	1014649	**Poll Classificatn:**	B
Air Program Code:	0	**Poll Compli Status:**	3
Air Program Status:	O	**Epa Class Code:**	B
Pollutant Code:	PM10	**Epa Compli Status:**	3
Chemical Abstract Service Nmbr:			

Air Program Code Subparts:
Air Program Code Ref: SIP Source
Epa Classification Code Ref: Potential uncontrolled emissions <100 tons/year
Epa Compliance Status Ref: In Compliance - Inspection
Pollutant Code Ref: Particulate Matter < 10 Um

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Pollutant Classification Ref: Potential uncontrolled emissions <100 tons/year
Pollutant Complian Status Ref: In Compliance - Inspection

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3 | **1 of 1** | **ENE** | **0.89 / 4,715.30** | **766.94 / 298** | **FLAT TOP MTN. DEPOSIT**
RIVERSIDE COUNTY
CATHEDRAL CITY CA 92234 | **MRDS**

Dep ID: 10115745
Dev Status: PAST PRODUCER
Code List: SDG
Url: http://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10115745
I1: 29
Latitude: 33.864075
Longitude: -116.463379

Commodity

I1: 44
Code: SDG
Commodity: Sand and Gravel, Cons
Commodity Type: Non-metallic
Commodity Group: Sand and Gravel
Importance: Primary
Line: 1
Inserted By: MAS migration
Insert Date: 29-OCT-2002 09:00:24
Updated By: USGS
Update Date: 29-OCT-2002 09:01:19

Names

I1: 14
Status: Current
Site Name: Flat Top Mtn. Deposit
Line: 1
Inserted By: MAS migration
Insert Date: 29-OCT-02
Updated By: USGS
Update Date: 29-OCT-02

Names

I1: 14
Status: Previous
Site Name: Flat Top Mtn Deposit
Line: 2
Inserted By: MAS migration
Insert Date: 29-OCT-02
Updated By: USGS
Update Date: 29-OCT-02

Unplottable Summary

Total: 3 Unplottable sites

DB	Company Name/Site Name	Address	City	Zip	ERIS ID
HAZNET	1X WELLS FARGO BANK	RIO BRAVO RESORT	BAKERSFIELD CA	933090000	826853088
HIST MANIFEST		RIO BRAVO RESORT	BAKERSFIELD CA	933090000	827502064
RCRA NON GEN	CR ENGLAND	I-10 E PAST EXIT 126 ***EPA Handler ID:*** CAC003134677	CATHEDRAL CITY CA	92234	894804667

Unplottable Report

Site: ***1X WELLS FARGO BANK***
RIO BRAVO RESORT BAKERSFIELD CA 933090000

HAZNET

SIC Code:		***Mailing City:***	SAN FRANCISCO
NAICS Code:		***Mailing State:***	CA
EPA ID:	CAC000101293	***Mailing Zip:***	941630000
Create Date:	7/19/1988	***Region Code:***	1
Fac Act Ind:	No	***Owner Name:***	WELLS FARGO BANK-TANK REMOVAL
Inact Date:	10/25/2000	***Owner Addr 1:***	--
County Code:	15	***Owner Addr 2:***	
County Name:	Kern	***Owner City:***	--
Mail Name:		***Owner State:***	99
Mailing Addr 1:	111 SUTTER STREET, 8TH FLOOR	***Owner Zip:***	--
Mailing Addr 2:		***Owner Phone:***	0000000000
Owner Fax:			

Details DTSC HWTS: The Department of Toxic Substances Control (DTSC) makes available a Waste Code Matrix showing each Waste Code, its description, and annual amounts in its Hazardous Waste Tracking System: https://hwts.dtsc.ca.gov/search

DTSC Handler Profile url: https://hwts.dtsc.ca.gov/facility/CAC000101293

Site:
RIO BRAVO RESORT BAKERSFIELD CA 933090000

HIST MANIFEST

Gen EPA ID:	CAC000101293
Create Date:	7/19/1988 0:00:00
Inact Date:	10/25/2000 0:00:00
Facility Mail Street:	111 SUTTER STREET, 8TH FLOOR
Facility Mail City:	SAN FRANCISCO
Facility Mail State:	CA
Facility Mail Zip:	941630000
Contact Phone(s):	4159832438
File Year(s):	1988
Contact Name(s):	NANCY HERRINGER, ACCT. OFFICER

Tanner Information

State Waste Code:	221	***Generator County:***	Kern
Year:	1988	***Tsd Epa ID:***	CAD980883177
Tons:	5	***Tsd County:***	Kern
Method Code:	R01		
State Waste Code Desc:	Waste oil and mixed oil		
Method Description:			

Site: ***CR ENGLAND***
I-10 E PAST EXIT 126 CATHEDRAL CITY CA 92234

RCRA NON GEN

EPA Handler ID:	CAC003134677
Gen Status Universe:	No Report
Contact Name:	HENRY HELFREICH
Contact Address:	4701 W. 2100 S , , SALT LAKE CITY , UT, 84120 ,
Contact Phone No and Ext:	800-897-1801
Contact Email:	MARISA.CORONEL-DURAN@USECOLOGY.COM
Contact Country:	
County Name:	RIVERSIDE
EPA Region:	09
Land Type:	
Receive Date:	20210816
Location Latitude:	

Location Longitude:

Violation/Evaluation Summary

Note: NO RECORDS: As of Jan 2023, there are no Compliance Monitoring and Enforcement (violation) records associated with this facility (EPA ID).

Handler Summary

Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility:	No
Onsite Burner Exemption:	No
Furnace Exemption:	No
Underground Injection Activity:	No
Commercial TSD:	No
Used Oil Transporter:	No
Used Oil Transfer Facility:	No
Used Oil Processor:	No
Used Oil Refiner:	No
Used Oil Burner:	No
Used Oil Market Burner:	No
Used Oil Spec Marketer:	No

Hazardous Waste Handler Details

Sequence No:	1
Receive Date:	20210816
Handler Name:	CR ENGLAND
Source Type:	Implementer
Federal Waste Generator Code:	N
Generator Code Description:	Not a Generator, Verified

Owner/Operator Details

Owner/Operator Ind:	Current Owner	***Street No:***	
Type:	Other	***Street 1:***	4701 W. 2100 S
Name:	CR ENGLAND	***Street 2:***	
Date Became Current:		***City:***	SALT LAKE CITY
Date Ended Current:		***State:***	UT
Phone:	800-897-1801	***Country:***	
Source Type:	Implementer	***Zip Code:***	84120

Owner/Operator Ind:	Current Operator	***Street No:***	
Type:	Other	***Street 1:***	4701 W. 2100 S
Name:	HENRY HELFREICH	***Street 2:***	
Date Became Current:		***City:***	SALT LAKE CITY
Date Ended Current:		***State:***	UT
Phone:	800-897-1801	***Country:***	
Source Type:	Implementer	***Zip Code:***	84120

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ERIS updates databases as set out in ASTM Standard E1527-13 and E1527-21, Section 8.1.8 Sources of Standard Source Information:

"Government information from nongovernmental sources may be considered current if the source updates the information at least every 90 days, or, for information that is updated less frequently than quarterly by the government agency, within 90 days of the date the government agency makes the information available to the public."

Standard Environmental Record Sources

Federal

National Priority List: NPL

Sites on the United States Environmental Protection Agency (EPA)'s National Priorities List of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. The NPL, which EPA is required to update at least once a year, is based primarily on the score a site receives from EPA's Hazard Ranking System. A site must be on the NPL to receive money from the Superfund Trust Fund for remedial action. Sites are represented by boundaries where available in the EPA Superfund Site Boundaries maintained by the Shared Enterprise Geodata and Services (SEGS). Site boundaries represent the footprint of a whole site, the sum of all of the Operable Units and the current understanding of the full extent of contamination; for Federal Facility sites, the total site polygon may be the Facility boundary. Where there is no polygon boundary data available for a given site, the site is represented as a point.

Government Publication Date: Jan 25, 2023

National Priority List - Proposed: PROPOSED NPL

Sites proposed by the United States Environmental Protection Agency (EPA), the state agency, or concerned citizens for addition to the National Priorities List (NPL) due to contamination by hazardous waste and identified by the EPA as a candidate for cleanup because it poses a risk to human health and/or the environment. Sites are represented by boundaries where available in the EPA Superfund Site Boundaries maintained by the Shared Enterprise Geodata and Services (SEGS). Site boundaries represent the footprint of a whole site, the sum of all of the Operable Units and the current understanding of the full extent of contamination; for Federal Facility sites, the total site polygon may be the Facility boundary. Where there is no polygon boundary data available for a given site, the site is represented as a point.

Government Publication Date: Jan 25, 2023

Deleted NPL: DELETED NPL

Sites deleted from the United States Environmental Protection Agency (EPA)'s National Priorities List. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate. Sites are represented by boundaries where available in the EPA Superfund Site Boundaries maintained by the Shared Enterprise Geodata and Services (SEGS). Site boundaries represent the footprint of a whole site, the sum of all of the Operable Units and the current understanding of the full extent of contamination; for Federal Facility sites, the total site polygon may be the Facility boundary. Where there is no polygon boundary data available for a given site, the site is represented as a point.

Government Publication Date: Jan 25, 2023

SEMS List 8R Active Site Inventory: SEMS

The U.S. Environmental Protection Agency's (EPA) Superfund Program has deployed the Superfund Enterprise Management System (SEMS), which integrates multiple legacy systems into a comprehensive tracking and reporting tool. This inventory contains active sites evaluated by the Superfund program that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The Active Site Inventory Report displays site and location information at active SEMS sites. An active site is one at which site assessment, removal, remedial, enforcement, cost recovery, or oversight activities are being planned or conducted. This data includes SEMS sites from the List 8R Active file as well as applicable sites from the SEMS GIS/REST file layer obtained from EPA's Facility Registry Service.

Government Publication Date: Jan 25, 2023

Inventory of Open Dumps, June 1985: ODI

The Resource Conservation and Recovery Act (RCRA) provides for publication of an inventory of open dumps. The Act defines "open dumps" as facilities which do not comply with EPA's "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR 257).

Government Publication Date: Jun 1985

SEMS List 8R Archive Sites: SEMS ARCHIVE

The U.S. Environmental Protection Agency's (EPA) Superfund Enterprise Management System (SEMS) Archived Site Inventory displays site and location information at sites archived from SEMS. An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. This data includes sites from the List 8R Archived site file.

Government Publication Date: Jan 25, 2023

Comprehensive Environmental Response, Compensation and Liability Information System - CERCLIS: CERCLIS

Superfund is a program administered by the United States Environmental Protection Agency (EPA) to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The EPA administers the Superfund program in cooperation with individual states and tribal governments; this database is made available by the EPA.

Government Publication Date: Oct 25, 2013

EPA Report on the Status of Open Dumps on Indian Lands: IODI

Public Law 103-399, The Indian Lands Open Dump Cleanup Act of 1994, enacted October 22, 1994, identified congressional concerns that solid waste open dump sites located on American Indian or Alaska Native (AI/AN) lands threaten the health and safety of residents of those lands and contiguous areas. The purpose of the Act is to identify the location of open dumps on Indian lands, assess the relative health and environment hazards posed by those sites, and provide financial and technical assistance to Indian tribal governments to close such dumps in compliance with Federal standards and regulations or standards promulgated by Indian Tribal governments or Alaska Native entities.

Government Publication Date: Dec 31, 1998

CERCLIS - No Further Remedial Action Planned: CERCLIS NFRAP

An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. The Archive designation means that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Government Publication Date: Oct 25, 2013

CERCLIS Liens: CERCLIS LIENS

A Federal Superfund lien exists at any property where EPA has incurred Superfund costs to address contamination ("Superfund site") and has provided notice of liability to the property owner. A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. This database is made available by the United States Environmental Protection Agency (EPA). This database was provided by the United States Environmental Protection Agency (EPA). Refer to SEMS LIEN as the current data source for Superfund Liens.

Government Publication Date: Jan 30, 2014

RCRA CORRACTS-Corrective Action: RCRA CORRACTS

RCRA Info is the U.S. Environmental Protection Agency's (EPA) comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. At these sites, the Corrective Action Program ensures that cleanups occur. EPA and state regulators work with facilities and communities to design remedies based on the contamination, geology, and anticipated use unique to each site.

Government Publication Date: Jan 23, 2023

RCRA non-CORRACTS TSD Facilities: RCRA TSD

RCRA Info is the U.S. Environmental Protection Agency's (EPA) comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. This database includes Non-Corrective Action sites listed as treatment, storage and/or disposal facilities of hazardous waste as defined by RCRA.

Government Publication Date: Jan 23, 2023

RCRA Generator List: RCRA LQG

RCRA Info is the U.S. Environmental Protection Agency's (EPA) comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

Government Publication Date: Jan 23, 2023

RCRA Small Quantity Generators List: RCRA SQG

RCRA Info is the U.S. Environmental Protection Agency's (EPA) comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Small Quantity Generators (SQGs) generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Government Publication Date: Jan 23, 2023

RCRA Very Small Quantity Generators List: RCRA VSQG

RCRA Info is the U.S. Environmental Protection Agency's (EPA) comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Very Small Quantity Generators (VSQG) generate 100 kilograms or less per month of hazardous waste, or one kilogram or less per month of acutely hazardous waste. Additionally, VSQG may not accumulate more than 1,000 kilograms of hazardous waste at any time.

Government Publication Date: Jan 23, 2023

RCRA Non-Generators: RCRA NON GEN

RCRA Info is the U.S. Environmental Protection Agency's (EPA) comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Non-Generators do not presently generate hazardous waste.

Government Publication Date: Jan 23, 2023

RCRA Sites with Controls: RCRA CONTROLS

List of Resource Conservation and Recovery Act (RCRA) facilities with institutional controls in place. RCRA gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances.

Government Publication Date: Jan 23, 2023

Federal Engineering Controls-ECs: FED ENG

This list of Engineering controls (ECs) is provided by the United States Environmental Protection Agency (EPA). ECs encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property. The EC listing includes remedy component data from Superfund decision documents issued in fiscal years 1982-2020 for applicable sites on the final or deleted on the National Priorities List (NPL); and sites with a Superfund Alternative Approach (SAA) Agreement in place. The only sites included that are not on the NPL; proposed for NPL; or removed from proposed NPL, are those with an SAA Agreement in place.

Government Publication Date: Feb 23, 2023

Federal Institutional Controls- ICs: FED INST

This list of Institutional controls (ICs) is provided by the United States Environmental Protection Agency (EPA). ICs are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Although it is EPA's expectation that treatment or engineering controls will be used to address principal threat wastes and that groundwater will be returned to its beneficial use whenever practicable, ICs play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site. The IC listing includes remedy component data from Superfund decision documents issued in fiscal years 1982-2020 for applicable sites on the final or deleted on the National Priorities List (NPL); and sites with a Superfund Alternative Approach (SAA) Agreement in place. The only sites included that are not on the NPL; proposed for NPL; or removed from proposed NPL, are those with an SAA Agreement in place.

Government Publication Date: Feb 23, 2023

Land Use Control Information System: LUCIS

The LUCIS database is maintained by the U.S. Department of the Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

Government Publication Date: Sep 1, 2006

Institutional Control Boundaries at NPL sites: NPL IC

Boundaries of Institutional Control areas at sites on the United States Environmental Protection Agency (EPA)'s National Priorities List, or Proposed or Deleted, made available by the EPA's Shared Enterprise Geodata and Services (SEGS). United States Environmental Protection Agency (EPA)'s National Priorities List of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. Institutional controls are non-engineered instruments such as administrative and legal controls that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy.

Government Publication Date: Jan 25, 2023

Emergency Response Notification System: ERNS 1982 TO 1986

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1982-1986

Emergency Response Notification System: ERNS 1987 TO 1989

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1987-1989

Emergency Response Notification System: ERNS

Database of oil and hazardous substances spill reports made available by the United States Coast Guard National Response Center (NRC). The NRC fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. These data contain initial incident data that has not been validated or investigated by a federal/state response agency.

Government Publication Date: Jan 16, 2023

The Assessment, Cleanup and Redevelopment Exchange System (ACRES) Brownfield Database: FED BROWNFIELDS

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. This data is provided by the United States Environmental Protection Agency (EPA) and includes Brownfield sites from the Cleanups in My Community (CIMC) web application.

Government Publication Date: Sep 13, 2022

FEMA Underground Storage Tank Listing: FEMA UST

The Federal Emergency Management Agency (FEMA) of the Department of Homeland Security maintains a list of FEMA owned underground storage tanks.

Government Publication Date: Dec 31, 2017

Facility Response Plan: FRP

List of facilities that have submitted Facility Response Plans (FRP) to EPA. Facilities that could reasonably be expected to cause "substantial harm" to the environment by discharging oil into or on navigable waters are required to prepare and submit Facility Response Plans (FRPs). Harm is determined based on total oil storage capacity, secondary containment and age of tanks, oil transfer activities, history of discharges, proximity to a public drinking water intake or sensitive environments.

Government Publication Date: Dec 31, 2021

Delisted Facility Response Plans: DELISTED FRP

Facilities that once appeared in - and have since been removed from - the list of facilities that have submitted Facility Response Plans (FRP) to EPA. Facilities that could reasonably be expected to cause "substantial harm" to the environment by discharging oil into or on navigable waters are required to prepare and submit Facility Response Plans (FRPs). Harm is determined based on total oil storage capacity, secondary containment and age of tanks, oil transfer activities, history of discharges, proximity to a public drinking water intake or sensitive environments.

Government Publication Date: Dec 31, 2021

Historical Gas Stations: HIST GAS STATIONS

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

Government Publication Date: Jul 1, 1930

Petroleum Refineries: REFN

List of petroleum refineries from the U.S. Energy Information Administration (EIA) Refinery Capacity Report. Includes operating and idle petroleum refineries (including new refineries under construction) and refineries shut down during the previous year located in the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, and other U.S. possessions. Survey locations adjusted using public data.

Government Publication Date: Aug 30, 2022

Petroleum Product and Crude Oil Rail Terminals: BULK TERMINAL

List of petroleum product and crude oil rail terminals made available by the U.S. Energy Information Administration (EIA). Includes operable bulk petroleum product terminals located in the 50 States and the District of Columbia with a total bulk shell storage capacity of 50,000 barrels or more, and/or the ability to receive volumes from tanker, barge, or pipeline; also rail terminals handling the loading and unloading of crude oil that were active between 2017 and 2018. Petroleum product terminals comes from the EIA-815 Bulk Terminal and Blender Report, which includes working, shell in operation, and shell idle for several major product groupings. Survey locations adjusted using public data.

Government Publication Date: Jun 29, 2022

LIEN on Property: SEMS LIEN

The U.S. Environmental Protection Agency's (EPA) Superfund Enterprise Management System (SEMS) provides Lien details on applicable properties, such as the Superfund lien on property activity, the lien property information, and the parties associated with the lien.

Government Publication Date: Jan 25, 2023

Superfund Decision Documents: SUPERFUND ROD

This database contains a list of decision documents for Superfund sites. Decision documents serve to provide the reasoning for the choice of (or) changes to a Superfund Site cleanup plan. The decision documents include completed Records of Decision (ROD), ROD Amendments, Explanations of Significant Differences (ESD) for active and archived sites stored in the Superfund Enterprise Management System (SEMS), along with other associated memos and files. This information is maintained and made available by the U.S. Environmental Protection Agency.

Government Publication Date: Dec 22, 2022

Formerly Utilized Sites Remedial Action Program: DOE FUSRAP

The U.S. Department of Energy (DOE) established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from the Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations. The DOE Office of Legacy Management (LM) established long-term surveillance and maintenance (LTS&M) requirements for remediated FUSRAP sites. DOE evaluates the final site conditions of a remediated site on the basis of risk for different future uses. DOE then confirms that LTS&M requirements will maintain protectiveness.

Government Publication Date: Mar 4, 2017

State

State Response Sites: RESPONSE

A list of identified confirmed release sites where the Department of Toxic Substances Control (DTSC) is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk. This database is state equivalent NPL.

Government Publication Date: Feb 6, 2023

EnviroStor Database: ENVIROSTOR

The EnviroStor Data Management System is made available by the Department of Toxic Substances Control (DTSC). Includes Corrective Action sites, Tiered Permit sites, Historical Sites and Evaluation/Investigation sites. This database is state equivalent CERCLIS.

Government Publication Date: Feb 6, 2023

Delisted State Response Sites: DELISTED ENVS

Sites removed from the list of State Response Sites made available by the EnviroStor Data Management System, Department of Toxic Substances Control (DTSC).

Government Publication Date: Feb 6, 2023

Solid Waste Information System (SWIS): SWF/LF

The Solid Waste Information System (SWIS) database made available by the Department of Resources Recycling and Recovery (CalRecycle) contains information on solid waste facilities, operations, and disposal sites throughout the State of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites.

Government Publication Date: Feb 9, 2023

Solid Waste Disposal Sites with Waste Constituents Above Hazardous Waste Levels: SWRCB SWF

This is a list of solid waste disposal sites identified by California State Water Resources Control Board with waste constituents above hazardous waste levels outside the waste management unit.

Government Publication Date: Sep 20, 2006

Waste Management Unit Database: WMUD

The Waste Management Unit Database System tracks and inventories waste management units. CCR Title 27 contains criteria stating that Waste Management Units are classified according to their ability to contain wastes. Containment shall be determined by geology, hydrology, topography, climatology, and other factors relating to the ability of the Unit to protect water quality. Water Code Section 13273.1 requires that operators submit a water quality solid waste assessment test (SWAT) report to address leak status. The WMUDS was last updated by the State Water Resources control board in 2000.

Government Publication Date: Jan 1, 2000

EnviroStor Hazardous Waste Facilities: HWP

A list of hazardous waste facilities including permitted, post-closure and historical facilities found in the Department of Toxic Substances Control (DTSC) EnviroStor database.

Government Publication Date: Feb 6, 2023

Sites Listed in the Solid Waste Assessment Test (SWAT) Program Report: SWAT

In a 1993 Memorandum of Understanding, the State Water Resources Control Board (SWRCB) agreed to submit a comprehensive report on the Solid Waste Assessment Test (SWAT) Program to the California Integrated Waste Management Board (CIWMB). This report summarizes the work completed to date on the SWAT Program, and addresses both the impacts that leakage from solid waste disposal sites (SWDS) may have upon waters of the State and the actions taken to address such leakage.

Government Publication Date: Dec 31, 1995

Construction and Demolition Debris Recyclers: C&D DEBRIS RECY

This listing of Construction and Demolition Debris Recyclers is maintained by the California Intergrated Waste Management Board-common C&D materials include lumber, drywall, metals, masonry (brick, concrete, etc.), carpet, plastic, pipe, rocks, dirt, paper, cardboard, or green waste related to land development.

Government Publication Date: Jun 20, 2018

Recycling Centers: RECYCLING

This list of Certified Recycling Centers that are operating under the state of California's Beverage Container Recycling Program is maintained by the California Department of Resources Recycling and Recovery.

Government Publication Date: Apr 13, 2023

Listing of Certified Processors: PROCESSORS

This list of Certified Processors that are operating under the state of California's Beverage Container Recycling Program is maintained by the California Department of Resources Recycling and Recovery.

Government Publication Date: Apr 13, 2023

Listing of Certified Dropoff, Collection, and Community Service Programs: CONTAINER RECY

This list of Certified Dropoff, Collection, and Community Service Programs (non-buyback) operating under the state of California's Beverage Container Recycling Program is maintained by the California Department of Resources Recycling and Recovery.

Government Publication Date: Jan 13, 2023

Land Disposal Sites: LDS

Land Disposal Sites in GeoTracker, the State Water Resources Control Board (SWRCB)'s data management system. The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units. Waste management units include waste piles, surface impoundments, and landfills.

Government Publication Date: Feb 27, 2023

Leaking Underground Fuel Tank Reports: LUST

List of Leaking Underground Storage Tanks within the Cleanup Sites data in GeoTracker database. GeoTracker is the State Water Resources Control Board's (SWRCB) data management system for managing sites that impact groundwater, especially those that require groundwater cleanup (Underground Storage Tanks, Department of Defense and Site Cleanup Program) as well as permitted facilities such as operating Underground Storage Tanks. The Leak Prevention Program that overlooks LUST sites is the SWRCB in California's Environmental Protection Agency.

Government Publication Date: Feb 27, 2023

Delisted Leaking Storage Tanks: DELISTED LST

List of Leaking Underground Storage Tanks (LUST) cleanup sites removed from GeoTracker, the State Water Resources Control Board (SWRCB)'s database system, as well as sites removed from the SWRCB's list of UST Case closures.

Government Publication Date: Mar 10, 2023

Permitted Underground Storage Tank (UST) in GeoTracker: UST

List of Permitted Underground Storage Tank (UST) sites made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA).

Government Publication Date: Jan 17, 2023

Proposed Closure of Underground Storage Tank Cases: UST CLOSURE

This listing includes Proposed Closure of Underground Storage Tank (UST) Cases which are being considered for closure by either the State Water Resources Control Board at a Future Board Meeting or the Executive Director that have been posted for a 60-day public comment period, and Closure of UST Cases with Closure Denials and Approved Orders. The lists are provided by the California Water Boards.

Government Publication Date: Mar 10, 2023

Historical Hazardous Substance Storage Information Database: HHSS

The Historical Hazardous Substance Storage database contains information collected in the 1980s from facilities that stored hazardous substances. The information was originally collected on paper forms, was later transferred to microfiche, and recently indexed as a searchable database. When using this database, please be aware that it is based upon self-reported information submitted by facilities which has not been independently verified. It is unlikely that every facility responded to the survey and the database should not be expected to be a complete inventory of all facilities that were operating at that time. This database is maintained by the California State Water Resources Control Board's (SWRCB) Geotracker.

Government Publication Date: Aug 27, 2015

Statewide Environmental Evaluation and Planning System: UST SWEEPS

The Statewide Environmental Evaluation and Planning System (SWEEPS) is a historical listing of active and inactive underground storage tanks made available by the California State Water Resources Control Board (SWRCB).

Government Publication Date: Oct 1, 1994

Aboveground Storage Tanks: AST

A statewide list from 2009 of aboveground storage tanks (ASTs) made available by the Cal FIRE Office of the State Fire Marshal (OSFM). This list is no longer maintained or updated by the Cal FIRE OSFM.

Government Publication Date: Aug 31, 2009

SWRCB Historical Aboveground Storage Tanks: AST SWRCB

A list of aboveground storage tanks made available by the California State Water Resources Control Board (SWRCB). Effective January 1, 2008, the Certified Unified Program Agencies (CUPAs) are vested with the responsibility and authority to implement the Aboveground Petroleum Storage Act (APSA).

Government Publication Date: Dec 1, 2007

Oil and Gas Facility Tanks: TANK OIL GAS

Locations of oil and gas tanks that fall under the jurisdiction of the Geologic Energy Management Division of the California Department of Conservation (CalGEM) (CCR 1760). CalGEM was formerly the Division of Oil, Gas, and Geothermal Resources (DOGGR).

Government Publication Date: Apr 12, 2023

Delisted Storage Tanks: DELISTED TNK

This database contains a list of storage tank sites that were removed by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA) and the Cal FIRE Office of State Fire Marshal (OSFM).

Government Publication Date: Apr 24, 2023

California Environmental Reporting System (CERS) Tanks: CERS TANK

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs. The CalEPA oversees the statewide implementation of the Unified Program which applies regulatory standards to protect Californians from hazardous waste and materials.

Government Publication Date: Jan 10, 2023

Delisted California Environmental Reporting System (CERS) Tanks: DELISTED CTNK

This database contains a list of Aboveground Petroleum Storage and Underground Storage Tank sites that were removed from in the California Environmental Protection Agency (CalEPA) Regulated Site Portal.

Government Publication Date: Jan 10, 2023

Historical Hazardous Substance Storage Container Information - Facility Summary: HIST TANK

The State Water Resources Control Board maintained the Hazardous Substance Storage Containers listing and inventory in th 1980s. This facility summary lists historic tank sites where the following container types were present: farm motor vehicle fuel tanks; waste tanks; sumps; pits, ponds, lagoons, and others; and all other product tanks. This set, published in May 1988, lists facility and owner information, as well as the number of containers. This data is historic and will not be updated.

Government Publication Date: May 27, 1988

Site Mitigation and Brownfields Reuse Program Facility Sites with Land Use Restrictions: LUR

The Department of Toxic Substances Control (DTSC) Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents land use restrictions that are active. Some sites have multiple land use restrictions.

Government Publication Date: Feb 6, 2023

CALSITES Database: CALSITES

This historical database was maintained by the Department of Toxic Substance Control (DTSC) for more than a decade. CALSITES contains information on Brownfield properties with confirmed or potential hazardous contamination. In 2006, DTSC introduced EnviroStor as the latest Brownfields site database.

Government Publication Date: May 1, 2004

Hazardous Waste Management Program Facility Sites with Deed / Land Use Restrictions: HLUR

The Department of Toxic Substances Control (DTSC) Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Government Publication Date: Feb 18, 2021

Deed Restrictions and Land Use Restrictions: DEED

List of Deed Restrictions, Land Use Restrictions and Covenants in GeoTracker made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency. A deed restriction (land use covenant) may be required to facilitate the remediation of past environmental contamination and to protect human health and the environment by reducing the risk of exposure to residual hazardous materials.

Government Publication Date: Feb 27, 2023

Voluntary Cleanup Program: VCP

List of sites in the Voluntary Cleanup Program made available by the Department of Toxic Substances and Control (DTSC). The Voluntary Cleanup Program was designed to respond to lower priority sites. Under the Voluntary Cleanup Program, DTSC enters site-specific agreements with project proponents for DTSC oversight of site assessment, investigation, and/or removal or remediation activities, and the project proponents agree to pay DTSC's reasonable costs for those services.

Government Publication Date: Feb 6, 2023

GeoTracker Cleanup Program Sites: CLEANUP SITES

A list of Cleanup Program sites in the state of California made available by The State Water Resources Control Board (SWRCB) of the California Environmental Protection Agency (EPA). SWRCB tracks leaking underground storage tank cleanups as well as other water board cleanups.

Government Publication Date: Feb 27, 2023

Delisted Cleanup Program Sites: DELISTED CLEANUP

A list of Cleanup Program sites which were once included - and have since been removed from - the list of Cleanup Program Sites in GeoTracker. GeoTracker is the State Water Resource Control Boards' data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.
Government Publication Date: Feb 27, 2023

Delisted County Records: DELISTED COUNTY
Records removed from county or CUPA databases. Records may be removed from the county lists made available by the respective county departments because they are inactive, or because they have been deemed to be below reportable thresholds.
Government Publication Date: Apr 4, 2023

Tribal

Leaking Underground Storage Tanks on Tribal/Indian Lands: INDIAN LUST
This list of leaking underground storage tanks (LUSTs) on Tribal/Indian Lands in Region 9, which includes California, is made available by the United States Environmental Protection Agency (EPA).
Government Publication Date: Nov 23, 2022

Underground Storage Tanks on Tribal/Indian Lands: INDIAN UST
This list of underground storage tanks (USTs) on Tribal/Indian Lands in Region 9, which includes California, is made available by the United States Environmental Protection Agency (EPA).
Government Publication Date: Nov 23, 2022

Delisted Tribal Leaking Storage Tanks: DELISTED INDIAN LST
Leaking Underground Storage Tank (LUST) facilities which once appeared on - and have since been removed from - the Regional Tribal/Indian LUST lists made available by the United States Environmental Protection Agency (EPA).
Government Publication Date: Nov 23, 2022

Delisted Tribal Underground Storage Tanks: DELISTED INDIAN UST
Underground Storage Tank (UST) facilities which once appeared on - and have since been removed from - the Regional Tribal/Indian UST lists made available by the United States Environmental Protection Agency (EPA).
Government Publication Date: Nov 23, 2022

County

Riverside County - Local Oversight Program List: LOP RIVERSIDE
A list of Leaking Underground Storage Tank (LUST) facilities in Riverside County. This list is made available by Riverside County Department of Environmental Health. Environmental Cleanup Program provides oversight of assessments and cleanups at properties that have been, or may have been, contaminated with hazardous substances from LUSTs or releases associated with other commercial/industrial use.
Government Publication Date: Jan 31, 2023

Riverside County - Underground Storage Tanks List: UST RIVERSIDE
A list of registered Underground Storage Tank (UST) sites in Riverside County. This list is made available by Riverside County Department of Environmental Health. The Hazardous Materials Management Branch (HMMB) regulates and oversees the inspections of constructions, repairs, upgrades, system operation and removal of UST systems.
Government Publication Date: Jan 31, 2023

Additional Environmental Record Sources

Federal

Facility Registry Service/Facility Index: FINDS/FRS

The Facility Registry Service (FRS) is a centrally managed database that identifies facilities, sites, or places subject to environmental regulations or of environmental interest. FRS creates high-quality, accurate, and authoritative facility identification records through rigorous verification and management procedures that incorporate information from program national systems, state master facility records, and data collected from EPA's Central Data Exchange registrations and data management personnel. This list is made available by the Environmental Protection Agency (US EPA).

Government Publication Date: Aug 18, 2022

Toxics Release Inventory (TRI) Program: TRIS

The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U. S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment. One of TRI's primary purposes is to inform communities about toxic chemical releases to the environment.

Government Publication Date: Aug 24, 2021

PFOA/PFOS Contaminated Sites: PFAS NPL

List of National Priorities List (NPL) and related Superfund Alternative Agreement (SAA) sites where PFOA or PFOS contaminants have been found in water and/or soil. The site listing is provided by the Federal Environmental Protection Agency (EPA).

Government Publication Date: Dec 28, 2022

Federal Agency Locations with Known or Suspected PFAS Detections: PFAS FED SITES

List of Federal agency locations with known or suspected detections of Per- and Polyfluoroalkyl Substances (PFAS), made available by the U.S. Environmental Protection Agency (EPA) in their PFAS Analytic Tools data. EPA outlines that these data are gathered from several federal entities, such as the Federal Superfund program, Department of Defense (DOD), National Aeronautics and Space Administration, Department of Transportation, and Department of Energy. Sites on this list do not necessarily reflect the source/s of contamination and detections do not indicate level of risk or human exposure at the site. Agricultural notifications in this data are limited to DOD sites only. At this time, the EPA is aware that this list is not comprehensive of all Federal agencies.

Government Publication Date: Jun 30, 2022

SSEHRI PFAS Contamination Sites: PFAS SSEHRI

This PFAS Contamination Site Tracker database is compiled by the Social Science Environmental Health Research Institute (SSEHRI) at Northeastern University. According to the SSEHRI, the database records qualitative and quantitative data from each known site of PFAS contamination, including timeline of discovery, sources, levels, health impacts, community response, and government response. The goal of this database is to compile information and support public understanding of the rapidly unfolding issue of PFAS contamination. All data presented was extracted from government websites, news articles, or publicly available documents, and this is cited in the tracker. Disclaimer: The source conveys this database undergoes regular updates as new information becomes available, some sites may be missing and/or contain information that is incorrect or outdated, as well as their information represents all contamination sites SSEHRI is aware of, not all possible contamination sites. This data is not intended to be used for legal purposes. Limited location details are available with this data. Access the following for the most current informations https://pfasproject.com/pfas-contamination-site-tr acker/

Government Publication Date: Dec 12, 2019

National Response Center PFAS Spills: ERNS PFAS

National Response Center (NRC) calls from 1990 to the most recent complete calendar year where there is indication of Aqueous Film Forming Foam (AFFF) usage. NRC calls may reference AFFF usage in the "Material Involved" or "Incident Description" fields. Data made available by the US Environmental Protection Agency (EPA). Disclaimer: dataset may include initial or misidentified incident data not yet validated or investigated by a federal/state response agency.

Government Publication Date: Feb 23, 2022

PFAS NPDES Discharge Monitoring: PFAS NPDES

This list of National Pollutant Discharge Elimination System (NPDES) permitted facilities with required monitoring for Per- and Polyfluoroalkyl (PFAS) Substances is made available via the U.S. Environmental Protection Agency (EPA)'s PFAS Analytic Tools. Any point-source wastewater discharger to waters of the United States must have a NPDES permit, which defines a set of parameters for pollutants and monitoring to ensure that the discharge does not degrade water quality or impair human health. This list includes NPDES permitted facilities associated with permits that monitor for Per- and Polyfluoroalkyl Substances (PFAS), limited to the years 2007 - present. EPA further advises the following regarding these data: currently, fewer than half of states have required PFAS monitoring for at least one of their permittees, and fewer states have established PFAS effluent limits for permittees. For states that may have required monitoring, some reporting and data transfer issues may exist on a state-by-state basis.

Government Publication Date: Feb 19, 2023

Perfluorinated Alkyl Substances (PFAS) from Toxic Release Inventory: PFAS TRI

List of Toxics Release Inventory (TRI) facilities at which the reported chemical is a Per- or polyfluorinated alkyl substance (PFAS) included in the Environmental Protection Agency (EPA)'s consolidated PFAS Master List of PFAS Substances. The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U.S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment.

Government Publication Date: Aug 24, 2021

Perfluorinated Alkyl Substances (PFAS) Water Quality: PFAS WATER

The Water Quality Portal (WQP) is a cooperative service sponsored by the United States Geological Survey (USGS), the Environmental Protection Agency (EPA), and the National Water Quality Monitoring Council (NWQMC). This listing includes records from the Water Quality Portal where the characteristic (environmental measurement) is in the Environmental Protection Agency (EPA)'s consolidated Master List of PFAS Substances.

Government Publication Date: Jul 20, 2020

PFAS TSCA Manufacture and Import Facilities: PFAS TSCA

The US Environmental Protection Agency (EPA) issued the Chemical Data Reporting (CDR) Rule under the Toxic Substances Control Act (TSCA) requiring facilities that manufacture or import chemical substances to report to EPA. This list is specific to TSCA Manufacture and Import Facilities with reported per- and poly-fluoroalkyl substances (PFAS). Data file made available by the EPA and includes CDR/Inventory Update Reporting data from 1998 up to 2020. EPA makes notes the following about these data: this data file includes production and importation data for chemicals identified in EPA's CompTox Chemicals Dashboard list of PFAS without explicit structures and list of PFAS structures in DSSTox. Note that some regulations have specific chemical structure requirements that define PFAS differently than the lists in EPA's CompTox Chemicals Dashboard. Reporting information on manufactured or imported chemical substance amounts should not be compared between facilities, as some companies claim Chemical Data Reporting Rule data fields for PFAS information as Confidential Business Information.

Government Publication Date: Jun 20, 2022

PFAS Waste Transfers from RCRA e-Manifest : PFAS E-MANIFEST

This Per- and Poly-Fluoroalkyl Substances (PFAS) Waste Transfers dataset is made available via the U.S. Environmental Protection Agency's (EPA) PFAS Analytic Tools. Every shipment of hazardous waste in the U.S. must be accompanied by a shipment manifest, which is a critical component of the cradle-to-grave tracking of wastes mandated by the Resource Conservation and Recovery Act (RCRA). According to the EPA, currently no Federal Waste Code exists for any PFAS compounds. To work around the lack of PFAS waste codes in the RCRA database, EPA developed the PFAS Transfers dataset by mining e-Manifest records containing at least one of these common PFAS keywords: • PFAS • PFOA • PFOS • PERFL • AFFF • GENX • GEN-X (plus the Vermont state-specific waste codes). Limitations: Amount or concentration of PFAS being transferred cannot be determined from the manifest information. Keyword searches may misidentify some manifest records that do not contain PFAS. This dataset should also not be considered to be exhaustive of all PFAS waste transfers.

Government Publication Date: Apr 9, 2023

Hazardous Materials Information Reporting System: HMIRS

US DOT - Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) Incidents Reports Database taken from Hazmat Intelligence Portal, U.S. Department of Transportation.

Government Publication Date: Sep 1, 2020

National Clandestine Drug Labs: NCDL

The U.S. Department of Justice ("the Department"), Drug Enforcement Administration (DEA), provides this data as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy.

Government Publication Date: Aug 30, 2022

Toxic Substances Control Act: TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.

The CDR enables EPA to collect and publish information on the manufacturing, processing, and use of commercial chemical substances and mixtures (referred to hereafter as chemical substances) on the TSCA Chemical Substance Inventory (TSCA Inventory). This includes current information on chemical substance production volumes, manufacturing sites, and how the chemical substances are used. This information helps the Agency determine whether people or the environment are potentially exposed to reported chemical substances. EPA publishes submitted CDR data that is not Confidential Business Information (CBI).

Government Publication Date: Apr 11, 2019

Hist TSCA: HIST TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.

The 2006 IUR data summary report includes information about chemicals manufactured or imported in quantities of 25,000 pounds or more at a single site during calendar year 2005. In addition to the basic manufacturing information collected in previous reporting cycles, the 2006 cycle is the first time EPA collected information to characterize exposure during manufacturing, processing and use of organic chemicals. The 2006 cycle also is the first time manufacturers of inorganic chemicals were required to report basic manufacturing information.

Government Publication Date: Dec 31, 2006

FTTS Administrative Case Listing: FTTS ADMIN

An administrative case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

FTTS Inspection Case Listing: FTTS INSP

An inspection case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

Potentially Responsible Parties List: PRP

Early in the site cleanup process, the U.S. Environmental Protection Agency (EPA) conducts a search to find the Potentially Responsible Parties (PRPs). The EPA looks for evidence to determine liability by matching wastes found at the site with parties that may have contributed wastes to the site. This listing contains PRPs, Noticed Parties, at sites in the EPA's Superfund Enterprise Management System (SEMS).

Government Publication Date: Jan 25, 2023

State Coalition for Remediation of Drycleaners Listing: SCRD DRYCLEANER

The State Coalition for Remediation of Drycleaners (SCRD) was established in 1998, with support from the U.S. Environmental Protection Agency (EPA) Office of Superfund Remediation and Technology Innovation. Coalition members are states with mandated programs and funding for drycleaner site remediation. Current members are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin. Since 2017, the SCRD no longer maintains this data, refer to applicable state source data where available.

Government Publication Date: Nov 08, 2017

Integrated Compliance Information System (ICIS): ICIS

The U.S. Environmental Protection Agency's Enforcement and Compliance History Online system incorporates data from the Integrated Compliance Information System - National Pollutant Discharge Elimination System (ICIS-NPDES). ICIS-NPDES is an information management system maintained by the Office of Compliance to track permit compliance and enforcement status of facilities regulated by the NPDES under the Clean Water Act. This data includes permit, inspection, violation and enforcement action information for applicable ICIS records.

Government Publication Date: Oct 15, 2022

Drycleaner Facilities: FED DRYCLEANERS

A list of drycleaner facilities from Enforcement and Compliance History Online (ECHO) data as made available by the U.S. Environmental Protection Agency (EPA), sourced from the ECHO Exporter file. The EPA tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

Government Publication Date: Dec 11, 2022

Delisted Drycleaner Facilities: DELISTED FED DRY

List of sites removed from the list of Drycleaner Facilities (sites in the EPA's Integrated Compliance Information System (ICIS) with NAIC or SIC codes identifying the business as a drycleaner establishment).

Government Publication Date: Dec 11, 2022

Formerly Used Defense Sites: FUDS

Formerly Used Defense Sites (FUDS) are properties that were formerly owned by, leased to, or otherwise possessed by and under the jurisdiction of the Secretary of Defense prior to October 1986, where the Department of Defense (DOD) is responsible for an environmental restoration. The FUDS Annual Report to Congress (ARC) is published by the U.S. Army Corps of Engineers (USACE). This data is compiled from the USACE's Geospatial FUDS data layers and Homeland Infrastructure Foundation-Level Data (HIFLD) FUDS dataset.

Government Publication Date: Jul 12, 2022

FUDS Munitions Response Sites: FUDS MRS

Boundaries of Munitions Response Sites (MRS), published with the Formerly Used Defense Sites (FUDS) Annual Report to Congress (ARC) by the U.S. Army Corps of Engineers (USACE). An MRS is a discrete location within a Munitions response area (MRA) that is known to require a munitions response. An MRA means any area on a defense site that is known or suspected to contain unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC). This data is compiled from the USACE's Geospatial MRS data layers and Homeland Infrastructure Foundation-Level Data (HIFLD) MRS dataset.

Government Publication Date: Jul 12, 2022

Former Military Nike Missile Sites: FORMER NIKE

This information was taken from report DRXTH-AS-IA-83A016 (Historical Overview of the Nike Missile System, 12/1984) which was performed by Environmental Science and Engineering, Inc. for the U.S. Army Toxic and Hazardous Materials Agency Assessment Division. The Nike system was deployed between 1954 and the mid-1970's. Among the substances used or stored on Nike sites were liquid missile fuel (JP-4); starter fluids (UDKH, aniline, and furfuryl alcohol); oxidizer (IRFNA); hydrocarbons (motor oil, hydraulic fluid, diesel fuel, gasoline, heating oil); solvents (carbon tetrachloride, trichloroethylene, trichloroethane, stoddard solvent); and battery electrolyte. The quantities of material a disposed of and procedures for disposal are not documented in published reports. Virtually all information concerning the potential for contamination at Nike sites is confined to personnel who were assigned to Nike sites. During deactivation most hardware was shipped to depot-level supply points. There were reportedly instances where excess materials were disposed of on or near the site itself at closure. There was reportedly no routine site decontamination.

Government Publication Date: Dec 2, 1984

PHMSA Pipeline Safety Flagged Incidents: PIPELINE INCIDENT

A list of flagged pipeline incidents made available by the U.S. Department of Transportation (US DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA regulations require incident and accident reports for five different pipeline system types.

Government Publication Date: Mar 31, 2021

Material Licensing Tracking System (MLTS): MLTS

A list of sites that store radioactive material subject to the Nuclear Regulatory Commission (NRC) licensing requirements. This list is maintained by the NRC. As of September 2016, the NRC no longer releases location information for sites. Site locations were last received in July 2016.

Government Publication Date: May 11, 2021

Historic Material Licensing Tracking System (MLTS) sites: HIST MLTS

A historic list of sites that have inactive licenses and/or removed from the Material Licensing Tracking System (MLTS). In some cases, a site is removed from the MLTS when the state becomes an "Agreement State". An Agreement State is a State that has signed an agreement with the Nuclear Regulatory Commission (NRC) authorizing the State to regulate certain uses of radioactive materials within the State.

Government Publication Date: Jan 31, 2010

Mines Master Index File: MINES

The Master Index File (MIF) is provided by the United State Department of Labor, Mine Safety and Health Administration (MSHA). This file, which was originally created in the 1970's, contained many Mine-IDs that were invalid. MSHA removes invalid IDs from the MIF upon discovery. MSHA applicable data includes the following: all Coal and Metal/Non-Metal mines under MSHA's jurisdiction since 1/1/1970; mine addresses for all mines in the database except for Abandoned mines prior to 1998 from MSHA's legacy system (addresses may or may not correspond with the physical location of the mine itself); violations that have been assessed penalties as a result of MSHA inspections beginning on 1/1/2000; and violations issued as a result of MSHA inspections conducted beginning on 1/1/2000.

Government Publication Date: Nov 7, 2022

Surface Mining Control and Reclamation Act Sites: SMCRA

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by the Office of Surface Mining Reclamation and Enforcement (OSMRE) to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of Abandoned Mine Land (AML) impacts, as well as information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Government Publication Date: Aug 18, 2022

Mineral Resource Data System: MRDS

The Mineral Resource Data System (MRDS) is a collection of reports describing metallic and nonmetallic mineral resources throughout the world. Included are deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references. This database contains the records previously provided in the Mineral Resource Data System (MRDS) of USGS and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS. The USGS has ceased systematic updates of the MRDS database with their focus more recently on deposits of critical minerals while providing a well-documented baseline of historical mine locations from USGS topographic maps.

Government Publication Date: Mar 15, 2016

DOE Legacy Management Sites: LM SITES

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) currently manages radioactive and chemical waste, environmental contamination, and hazardous material at over 100 sites across the U.S. The LM manages sites with diverse regulatory drivers (statutes or programs that direct cleanup and management requirements at DOE sites) or as part of internal DOE or congressionally-recognized programs, such as but not limited to: Formerly Utilized Sites Remedial Action Program (FUSRAP), Uranium Mill Tailings Radiation Control Act (UMTRCA Title I, Tile II), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), Decontamination and Decommissioning (D&D), Nuclear Waste Policy Act (NWPA). This site listing includes data exported from the DOE Office of LM's Geospatial Environmental Mapping System (GEMS). GEMS Data disclaimer: The DOE Office of LM makes no representation or warranty, expressed or implied, regarding the use, accuracy, availability, or completeness of the data presented herein.

Government Publication Date: Dec 1, 2022

Alternative Fueling Stations: ALT FUELS

This list of alternative fueling stations is sourced from the Alternative Fuels Data Center (AFDC). The U.S. Department of Energy's Office of Energy Efficiency & Renewable Energy launched the AFDC in 1991 as a repository for alternative fuel vehicle performance data, which provides a wealth of information and data on alternative and renewable fuels, advanced vehicles, fuel-saving strategies, and emerging transportation technologies. The data includes Biodiesel (B20 and above), Compressed Natural Gas (CNG), Electric, Ethanol (E85), Hydrogen, Liquefied Natural Gas (LNG), Propane (LPG) fuel type locations.

Government Publication Date: Jan 3, 2023

Superfunds Consent Decrees: CONSENT DECREES

This list of Superfund consent decrees is provided by the Department of Justice, Environment & Natural Resources Division (ENRD) through a Freedom of Information Act (FOIA) applicable file. This listing includes Consent Decrees for CERCLA or Superfund Sites filed and/or as proposed within the ENRD's Case Management System (CMS) since 2010. CMS may not reflect the latest developments in a case nor can the agency guarantee the accuracy of the data. ENRD Disclaimer: Congress excluded three discrete categories of law enforcement and national security records from the requirements of the FOIA; response is limited to those records that are subject to the requirements of the FOIA; however, this should not be taken as an indication that excluded records do, or do not, exist.

Government Publication Date: Jan 11, 2023

Air Facility System: AFS

This EPA retired Air Facility System (AFS) dataset contains emissions, compliance, and enforcement data on stationary sources of air pollution. Regulated sources cover a wide spectrum; from large industrial facilities to relatively small operations such as dry cleaners. AFS does not contain data on facilities that are solely asbestos demolition and/or renovation contractors, or landfills. ECHO Clean Air Act data from AFS are frozen and reflect data as of October 17, 2014; the EPA retired this system for Clean Air Act stationary sources and transitioned to ICIS-Air.

Government Publication Date: Oct 17, 2014

Registered Pesticide Establishments: SSTS

List of active EPA-registered foreign and domestic pesticide-producing and device-producing establishments based on data from the Section Seven Tracking System (SSTS). The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 7 requires that facilities producing pesticides, active ingredients, or devices be registered. The list of establishments is made available by the EPA.

Government Publication Date: Mar 30, 2022

Polychlorinated Biphenyl (PCB) Transformers: PCBT

Locations of Transformers Containing Polychlorinated Biphenyls (PCBs) registered with the United States Environmental Protection Agency. PCB transformer owners must register their transformer(s) with EPA. Although not required, PCB transformer owners who have removed and properly disposed of a registered PCB transformer may notify EPA to have their PCB transformer de-registered. Data made available by EPA.

Government Publication Date: Oct 15, 2019

Polychlorinated Biphenyl (PCB) Notifiers: PCB

Facilities included in the national list of facilities that have notified the United States Environmental Protection Agency (EPA) of Polychlorinated Biphenyl (PCB) activities. Any company or person storing, transporting or disposing of PCBs or conducting PCB research and development must notify the EPA and receive an identification number.

Government Publication Date: Nov 3, 2022

State

PFAS Sampling Locations: PFAS SAMPLING

This data is sourced from the State Water Board's GeoTracker Per- and Polyfluoroalkyl Substances (PFAS) Map tool which contains individual sampling points (i.e., soil boring, groundwater monitoring well, drinking water well for municipal drinking water systems, etc.) or a site location with PFAS analytical data. Includes analytical results that are finalized and submitted electronically by the Responsible Parties via GeoTracker's Electronic Submittal of Information Portal, and after it's accepted by a Regional Water Quality Control Board.

Government Publication Date: Mar 14, 2023

Dry Cleaning Facilities: DRYCLEANERS

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial, linen supply, commercial laundry, dry cleaning and pressing machines - Coin Operated Laundry and Dry Cleaning. This is provided by the Department of Toxic Substance Control.

Government Publication Date: Dec 20, 2021

Delisted Drycleaners: DELISTED DRYCLEANERS

Sites removed from the list of drycleaner related facilities that have EPA ID numbers, made available by the California Department of Toxic Substance Control.

Government Publication Date: Jan 31, 2022

Non-Toxic Dry Cleaning Incentive Program: DRYC GRANT

A list of grant recipients of the Non-Toxic Dry Cleaning Incentive Program made available by the California Air Resources Board (CARB). The program provides grants to eligible dry cleaning businesses to assist them in transitioning away from PERC machines to alternative non-toxic and non-smog forming technologies.

Government Publication Date: Jan 31, 2022

Per- and Polyfluoroalkyl Substances (PFAS): PFAS

List of FAA Part 139 Airports, Selected Landfills, and Chrome Plating Facilities from California Water Boards PFAS Investigations, as well as sites from the State Water Resources Control Board (SWRCB)'s GeoTracker at which one or more of the potential contaminants of concern are in the PFAS Master List of PFAS Substances made available by the Environmental Protection Agency (US EPA).

Government Publication Date: Feb 15, 2022

PFOA/PFOS Groundwater: PFAS GW

A list of water wells from the Groundwater Ambient Monitoring and Assessment Program (GAMA) Groundwater Information System with the groundwater chemical perfluorooctanoic acid (PFOA) (NL = 0.014 UG/L) or perfluorooctanoic sulfonate (PFOS) (NL = 0.013 UG/L). The GAMA Groundwater Information System search is made available by California Water Boards.

Government Publication Date: Feb 4, 2023

Hazardous Waste and Substances Site List - Site Cleanup: HWSS CLEANUP

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. This list is published by California Department of Toxic Substance Control.

Government Publication Date: Nov 2, 2022

Toxic Pit Cleanup Act Sites: TOXIC PITS

The Toxic Pits Cleanup Act (TPCA) list identifies sites suspected of containing hazardous substances where cleanup has not yet been completed. This list was maintained by the State Water Resources Control Board (SWRCB), is not longer maintained, and updates are not planned.

Government Publication Date: Jul 1, 1995

List of Hazardous Waste Facilities Subject to Corrective Action: DTSC HWF

This is a list of hazardous waste facilities identified in Health and Safety Code (HSC) § 25187.5. These facilities are those where Department of Toxic Substances Control (DTSC) has taken or contracted for corrective action because a facility owner/operator has failed to comply with a date for taking corrective action in an order issued under HSC § 25187, or because DTSC determined that immediate corrective action was necessary to abate an imminent or substantial endangerment.

Government Publication Date: Jul 18, 2016

EnviroStor Inspection, Compliance, and Enforcement: INSP COMP ENF

A list of permitted facilities with inspections and enforcements tracked by the California Department of Toxic Substance Control's (DTSC) EnviroStor data management system.

Government Publication Date: Oct 24, 2022

School Property Evaluation Program Sites: SCH

A list of sites registered with The Department of Toxic Substances Control (DTSC) School Property Evaluation and Cleanup (SPEC) Division. SPEC is responsible for assessing, investigating and cleaning up proposed school sites. The Division ensures that selected properties are free of contamination or, if the properties were previously contaminated, that they have been cleaned up to a level that protects the students and staff who will occupy the new school.

Government Publication Date: Feb 6, 2023

California Hazardous Material Incident Report System (CHMIRS): CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS). This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Nov 18, 2022

Historical California Hazardous Material Incident Report System (CHMIRS): HIST CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS) prior to 1993. This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Jan 1, 1993

Handlers from Hazardous Waste Manifest Data: HAZNET

A list of handlers not otherwise classified as Treatment, Storage, Disposal facilities (TSDF) or generators from the facilities and manifests data made available by the California Department of Toxic Substances Control (DTSC) in their Hazardous Waste Tracking System (HWTS).

Government Publication Date: Oct 24, 2016

Generators from Hazardous Waste Manifest Data: HAZ GEN

List of handlers listed as having generated waste from the facilities and manifests data made available by the California Department of Toxic Substances Control (DTSC) in their Hazardous Waste Tracking System (HWTS).

Government Publication Date: Dec 31, 2017

TSDF from Hazardous Waste Manifest Data: HAZ TSD

List of Treatment, Storage, and Disposal Facilities (TSDFs) from the facilities and manifests data made available by the California Department of Toxic Substances Control (DTSC) in their Hazardous Waste Tracking System (HWTS).

Government Publication Date: Dec 31, 2017

Historical Hazardous Waste Manifest Data: HIST MANIFEST

A list of historic hazardous waste manifests received by the Department of Toxic Substances Control (DTSC) from year the 1980 to 1992. The volume of manifests is typically 900,000 - 1,000,000 annually, representing approximately 450,000 - 500,000 shipments.

Government Publication Date: Dec 31, 1992

DTSC Registered Hazardous Waste Transporters: HW TRANSPORT

The California Department of Toxic Substances Control (DTSC) maintains this list of Registered Hazardous Waste Transporters.

Government Publication Date: Mar 23, 2023

Registered Waste Tire Haulers: WASTE TIRE

This list of registered waste tire haulers is maintained by the California Department of Resources Recycling and Recovery.

Government Publication Date: Oct 11, 2022

California Medical Waste Management Program Facility List: MEDICAL WASTE

This list of Medical Waste Management Program Facilities is maintained by the California Department of Public Health. The Medical Waste Management Program (MWMP) regulates the generation, handling, storage, treatment, and disposal of medical waste by providing oversight for the implementation of the Medical Waste Management Act (MWMA). The MWMP permits and inspects all medical waste off-site treatment facilities, medical waste transporters, and medical waste transfer stations. This list contains transporters, treatment, and transfer facilities.

Government Publication Date: Jan 9, 2023

Historical Cortese List: HIST CORTESE

List of sites which were once included on the Cortese list. The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements for providing information about the location of hazardous sites.

Government Publication Date: Nov 13, 2008

Cease and Desist Orders and Cleanup and Abatement Orders: CDO/CAO

The California Environment Protection Agency "Cortese List" of active Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO). This list contains many CDOs and CAOs that do NOT concern the discharge of wastes that are hazardous materials. Many of the listed orders concern, as examples, discharges of domestic sewage, food processing wastes, or sediment that do not contain hazardous materials, but the Water Boards' database does not distinguish between these types of orders.

Government Publication Date: Dec 6, 2021

California Environmental Reporting System (CERS) Hazardous Waste Sites: CERS HAZ

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the following regulatory programs: Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, RCRA LQ HW Generator. The CalEPA oversees the statewide implementation of the Unified Program which applies regulatory standards to protect Californians from hazardous waste and materials.

Government Publication Date: Feb 8, 2023

Delisted Environmental Reporting System (CERS) Hazardous Waste Sites: DELISTED HAZ

This database contains a list of sites that were removed from the California Environmental Protection Agency (CalEPA) in the following regulatory programs: Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, RCRA LQ HW Generator.

Government Publication Date: Nov 29, 2018

Sites in GeoTracker: GEOTRACKER

GeoTracker is the State Water Resource Control Boards' data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater. This is a list of sites in GeoTracker that aren't otherwise categorized as LUST, Land Disposal Sites (LDS), Cleanup Sites, or sites having Waste Discharge Requirements (WDR). This listing includes program types such as Underground Injection Control (UIC), Confined Animal Facilities (CAF), Irrigated Lands Regulatory Program, plans, and non-case information.

Government Publication Date: Feb 27, 2023

Mines Listing: MINE

This list includes mine site locations extracted from the Mines Online database, maintained by the California Department of Conservation. Mines Online (MOL) is an interactive web map designed with GIS features that provide information such as the mine name, mine status, commodity sold, location, and other mine specific data. Please note: Mine location information is provided to assist experts in determining the location of mine operators in accordance with California Civil Code section 1103.4 and reflects information reported by mine operators in annual reports provided under Public Resources Code section 2207. While the Division of Mine Reclamation (DMR) attempts to populate MOL with accurate location information, the DMR cannot guarantee the accuracy of operator reported location information.

Government Publication Date: Dec 19, 2022

Recorded Environmental Cleanup Liens: LIEN

The California Department of Toxic Substance Control (DTSC) maintains this list of liens placed upon real properties. A lien is utilized by the DTSC to obtain reimbursement from responsible parties for costs associated with the remediation of contaminated properties.

Government Publication Date: Aug 3, 2022

Waste Discharge Requirements: WASTE DISCHG

List of sites in California State Water Resources Control Board (SWRCB) Waste Discharge Requirements (WDRs) Program in California, made available by the SWRCB via GeoTracker. The WDR program regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Government Publication Date: Feb 27, 2023

Toxic Pollutant Emissions Facilities: EMISSIONS

A list of criteria and toxic pollutant emissions data for facilities in California made available by the California Environmental Protection Agency - Air Resources Board (ARB). Risk data may be based on previous inventory submittals. The toxics data are submitted to the ARB by the local air districts as requirement of the Air Toxics "Hot Spots" Program. This program requires emission inventory updates every four years.

Government Publication Date: Dec 31, 2020

Clandestine Drug Lab Sites: CDL

The Department of Toxic Substances Control (DTSC) maintains a listing of drug lab sites. DTSC is responsible for removal and disposal of hazardous substances discovered by law enforcement officials while investigating illegal/clandestine drug laboratories.

Government Publication Date: Jan 19, 2021

Tribal

No Tribal additional environmental record sources available for this State.

County

Riverside County - Hazardous Waste Generator Sites List: HWG RIVERSIDE

A list of Hazardous Waste Generator Sites in the County of Riverside. This list is made available by Riverside County Department of Environmental Health which has been designated as the CUPA for the County.

Government Publication Date: Jan 31, 2023

Riverside County - Disclosure Facility List: HZH RIVERSIDE

A list of facilities disclosed to Riverside County Department of Environmental Health (DEH). This list is made available by Riverside County DEH which has been designated as the CUPA for the County. A business is required to establish and submit a Business Plan if the facility handles hazardous material equal to or greater than 55 gallons, 500 pounds or 200 cubic feet at any time during the year.

Government Publication Date: Jan 31, 2023

Riverside County - Medical Waste Facilities: MED WST RIVERSIDE

This list of active and inactive medical waste facilities is maintained by the County of Riverside Department of Environmental Health.

Government Publication Date: Jan 12, 2023

Riverside County - California Accidental Release Prevention Program Sites: RMP RIVERSIDE

This list of Riverside County California Accidental Release Prevention Program sites is maintained by the County of Riverside Department of Environmental Health. AB 3777 was enacted in 1986 to minimize potential emergencies involving acutely hazardous materials by requiring facilities which handle these materials to submit Risk Management Prevention Plans. The Riverside County Department of Environmental Health Hazardous Materials Branch began implementation of this Program County-wide in January 1991. All cities within Riverside County are included in this list.

Government Publication Date: Jan 31, 2023

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

HISTORICAL AERIALS

Project Property: Verano Development
W of Landau/North of Verona
Cathedral City CA 92234

Project No: 305289-002

Requested By: Earth Systems Pacific

Order No: 23042700717

Date Completed: May 02,2023

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

Date	Source	Scale	Comments
2021	MAXAR TECHNOLOGIES	1" = 900'	
2020	United States Department of Agriculture	1" = 900'	
2018	United States Department of Agriculture	1" = 900'	
2016	United States Department of Agriculture	1" = 900'	
2014	United States Department of Agriculture	1" = 900'	
2012	United States Department of Agriculture	1" = 900'	
2010	United States Department of Agriculture	1" = 900'	
2009	United States Department of Agriculture	1" = 900'	
2005	United States Department of Agriculture	1" = 900'	
2002	United States Geological Survey	1" = 900'	
1996	United States Geological Survey	1" = 900'	
1989	United States Geological Survey	1" = 900'	Best Copy Available
1980	United States Department of Agriculture	1" = 900'	
1977	Bureau of Land Management	1" = 900'	
1972	United States Geological Survey	1" = 900'	
1959	Agricultural Stabilization & Conserv. Service	1" = 900'	
1953	Agricultural Stabilization & Conserv. Service	1" = 900'	

Year: 2021
Source: MAXAR
Scale: 1" = 900'
Comment:

Address: W of Landau/North of Verona, Cathedral City, CA
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

ERIS

Year: 2020
Source: USDA
Scale: 1" = 900'
Comment:

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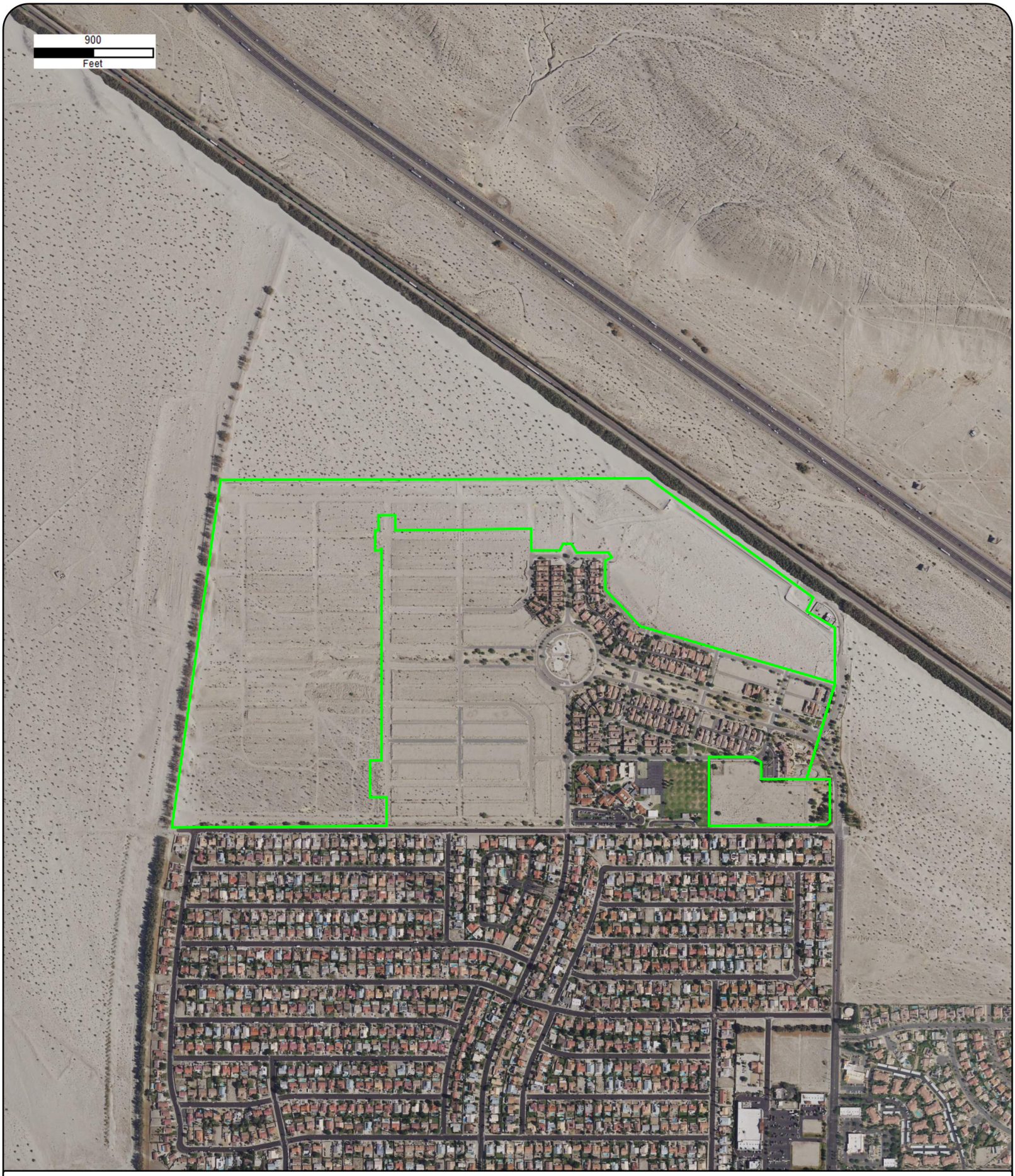
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

ERIS



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Scale: 1" = 900'
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Order No: 23042700717

ERIS

Year: 2016
Source: USDA
Scale: 1" = 900'
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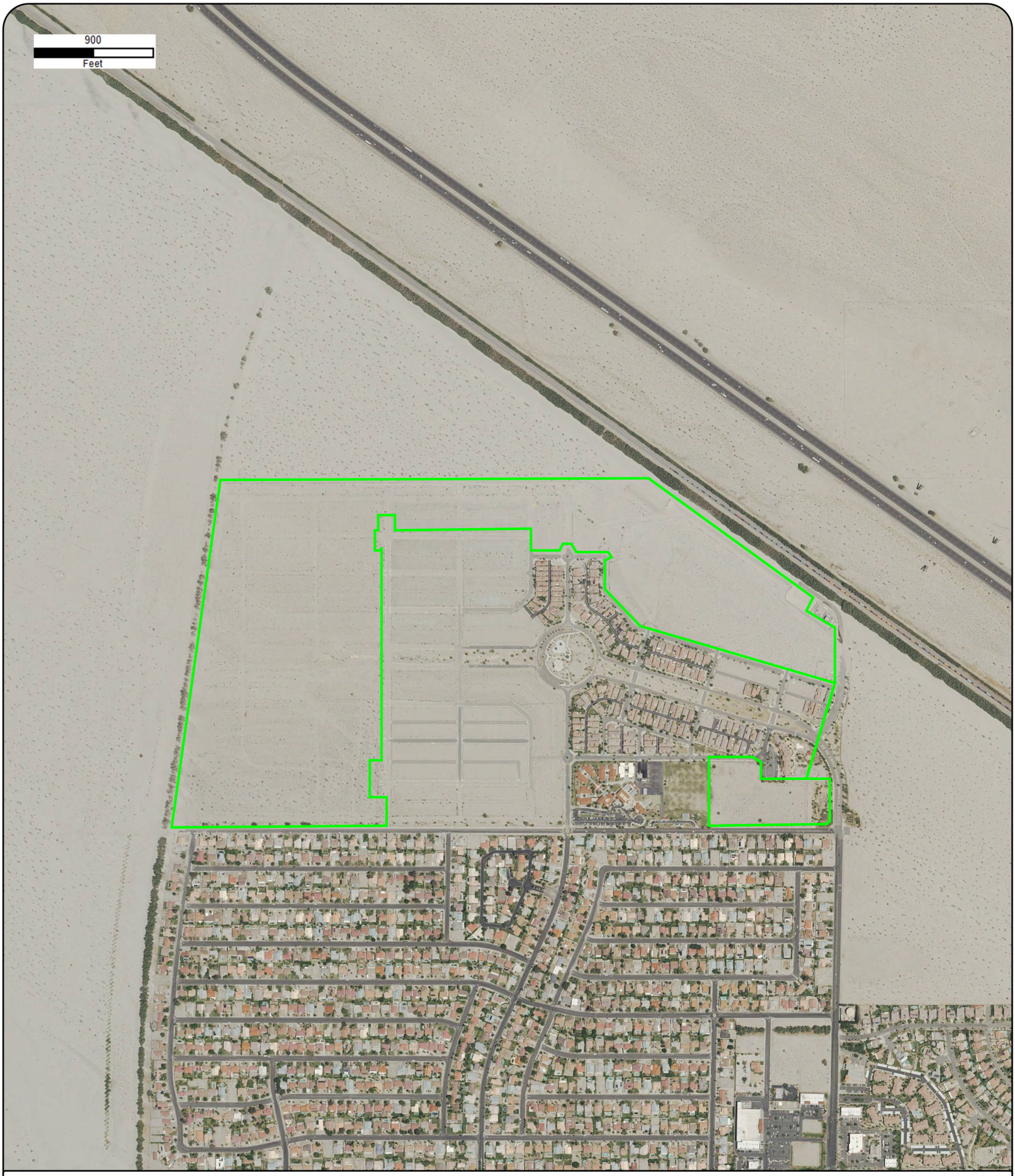
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

ERIS



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Source: USDA
Scale: 1" = 900'
Comment:

Address: W of Landau/North of Verona, Cathedral City, CA
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

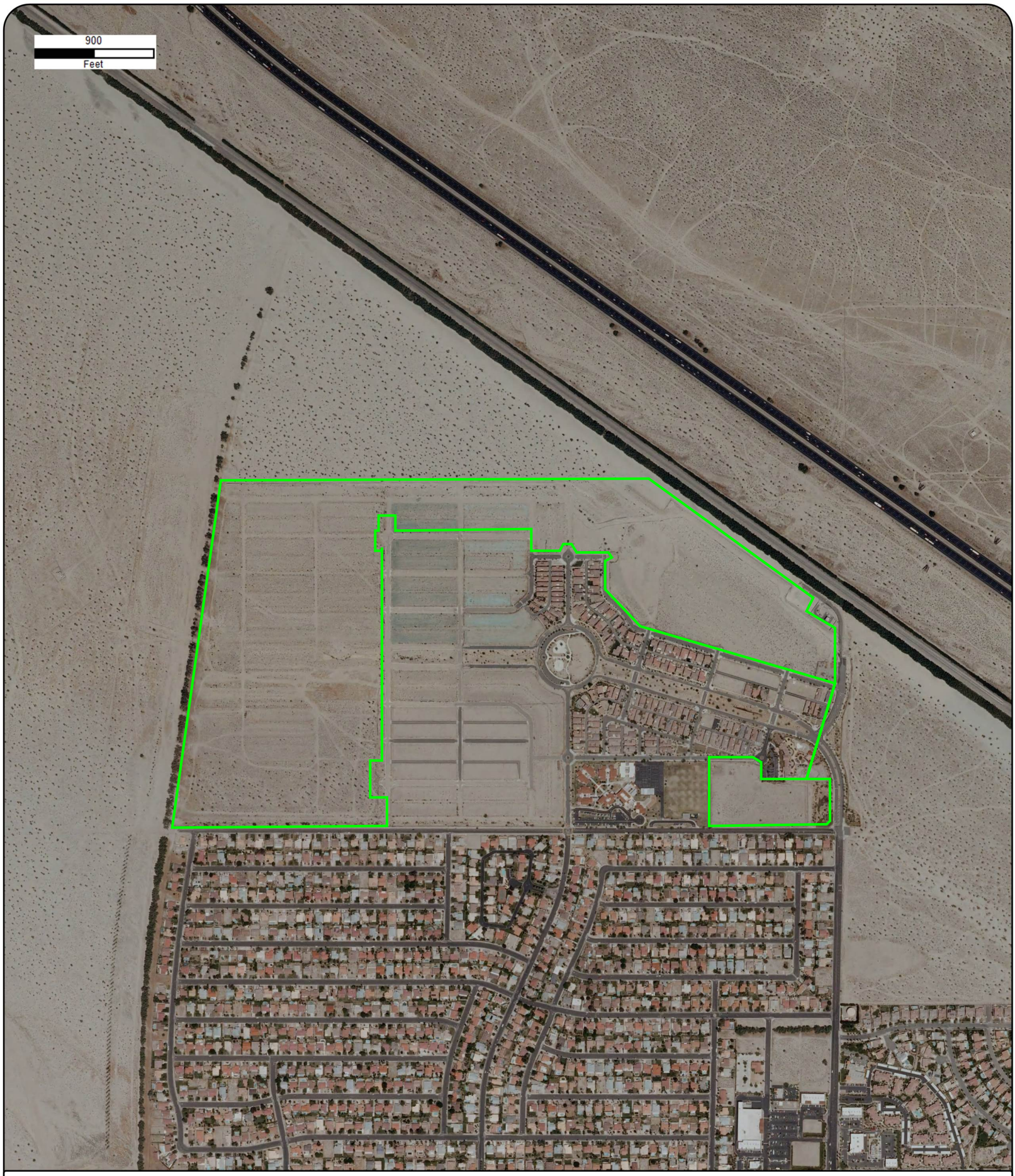
ERIS

Year: 2012
Source: USDA
Scale: 1" = 900'
Comment:

Address: W of Landau/North of Verona, Cathedral City, CA
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

ERIS



Year: 2010
Source: USDA
Scale: 1" = 900'
Comment:

Address: W of Landau/North of Verona, Cathedral City, CA
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

ERIS

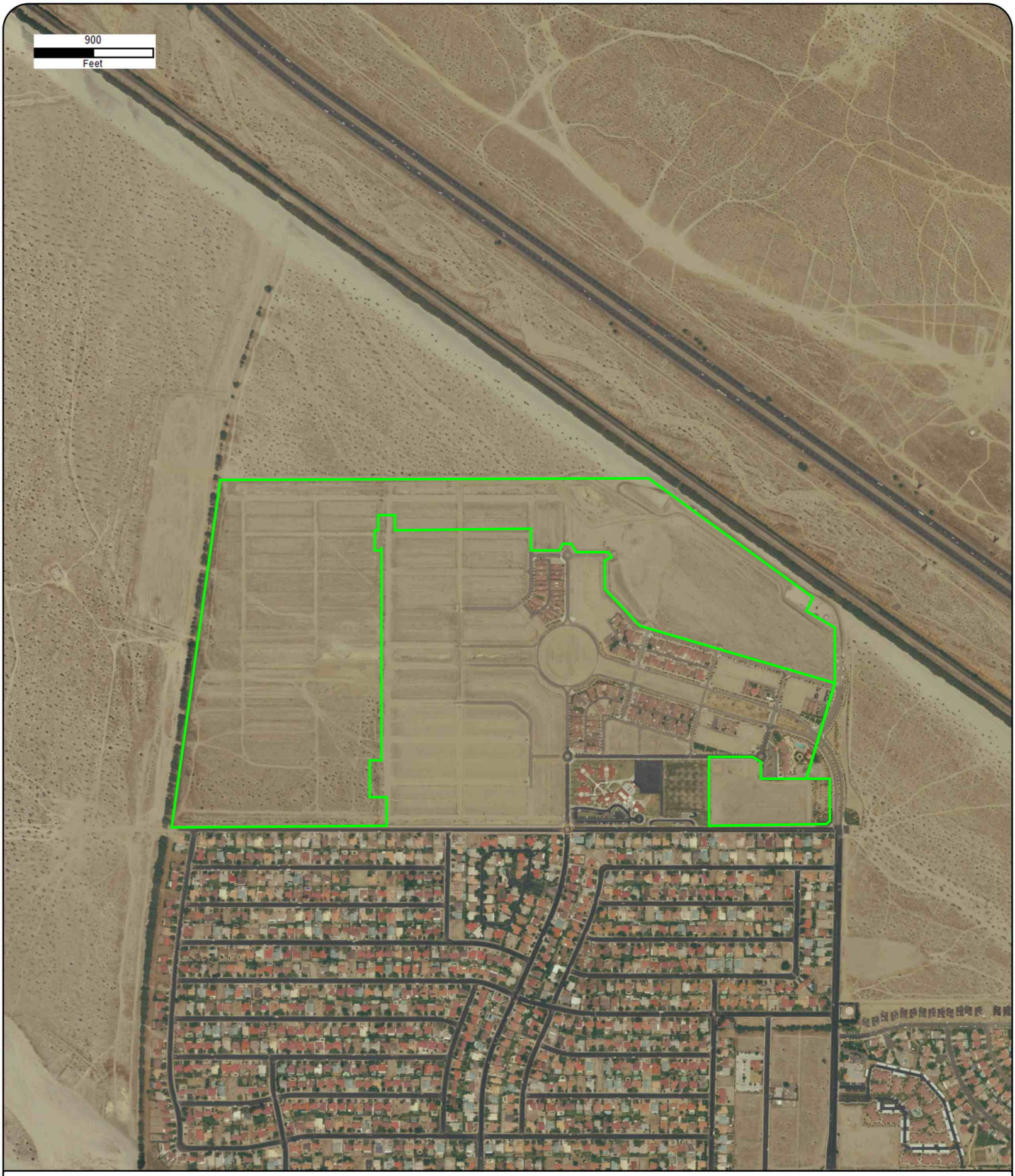
Year: 2009
Source: USDA
Scale: 1" = 900'
Comment:

Address: W of Landau/North of Verona, Cathedral City, CA

Approx Center: -116.48547605,33.85610265

Order No: 23042700717

ERIS



Year: 2005
Source: USDA
Scale: 1" = 900'
Comment:

Address: W of Landau/North of Verona, Cathedral City, CA
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

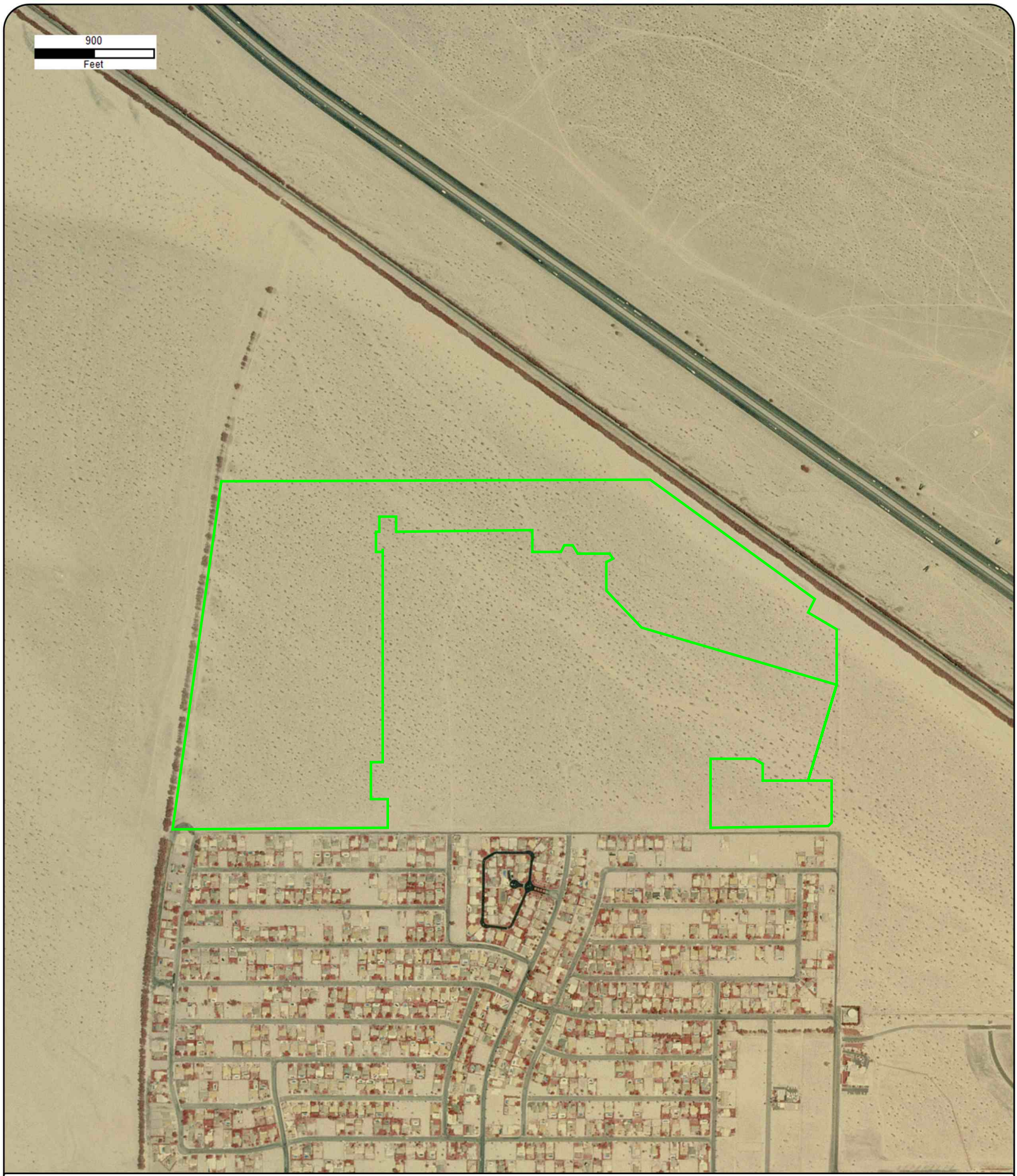
ERIS

Year: 2002
Source: USGS
Scale: 1" = 900'
Comment:

Address: W of Landau/North of Verona, Cathedral City, CA
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

ERIS



Year: 1996
Source: USGS
Scale: 1" = 900'
Comment:

Address: W of Landau/North of Verona, Cathedral City, CA
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

ERIS

Year: 1989
Source: USGS
Scale: 1" = 900'
Comment: Best Copy Available

Address: W of Landau/North of Verona, Cathedral City, CA
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

ERIS

Year: 1980
Source: USDA
Scale: 1" = 900'
Comment:

Address: W of Landau/North of Verona, Cathedral City, CA
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

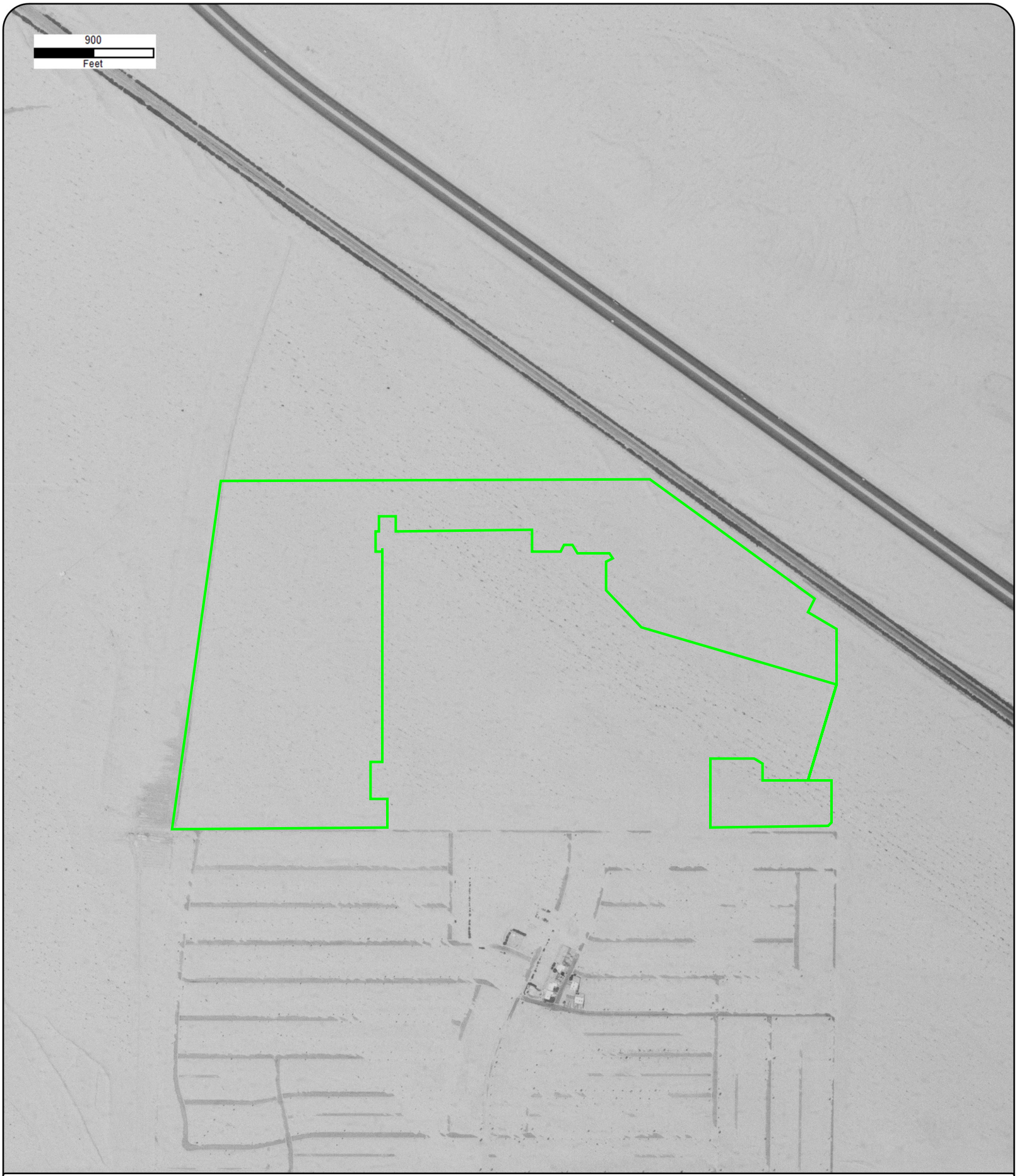
ERIS

Year: 1977
Source: BLM
Scale: 1" = 900'
Comment:

Address: W of Landau/North of Verona, Cathedral City, CA
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

ERIS

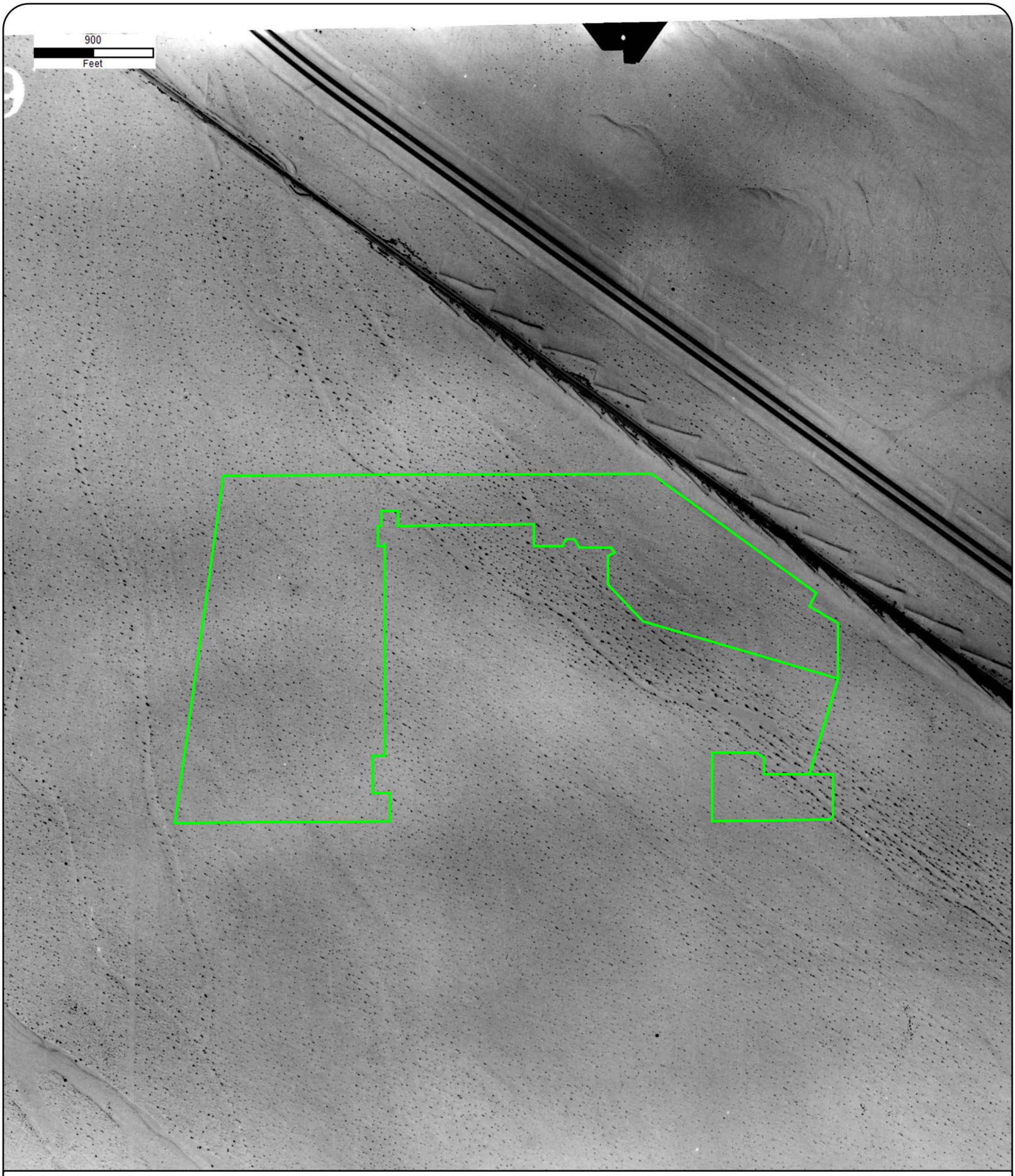


Year: 1972
Source: USGS
Scale: 1" = 900'
Comment:

Address: W of Landau/North of Verona, Cathedral City, CA
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

ERIS

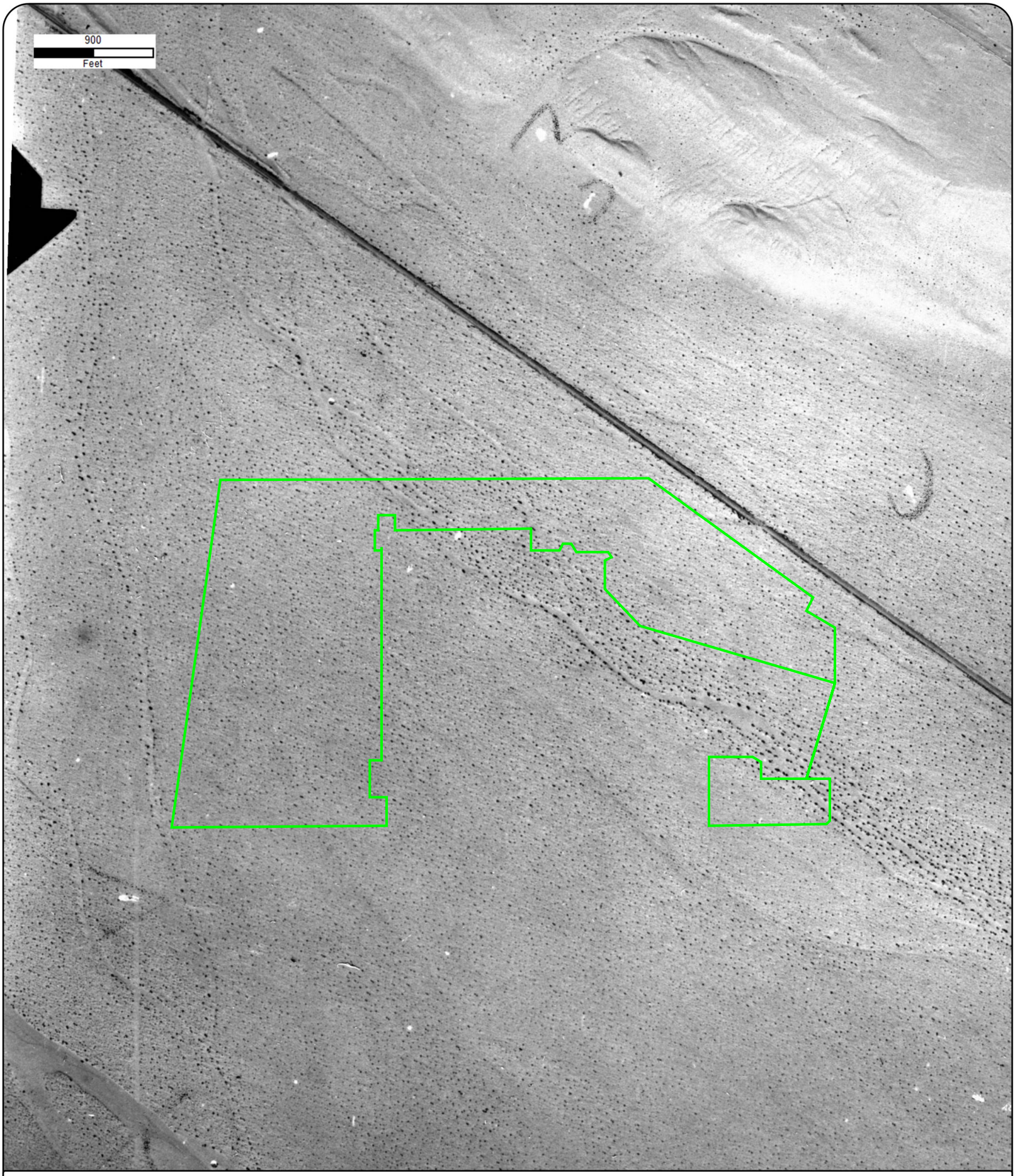


Year: 1959
Source: ASCS
Scale: 1" = 900'
Comment:

Address: W of Landau/North of Verona, Cathedral City, CA
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

ERIS



Year: 1953
Source: ASCS
Scale: 1" = 900'
Comment:

Address: W of Landau/North of Verona, Cathedral City, CA
Approx Center: -116.48547605,33.85610265

Order No: 23042700717

ERIS

FIRE INSURANCE MAPS

Project Property:	Verano Development W of Landau/North of Verona Cathedral City CA 92234
Project No:	305289-002
Requested By:	Earth Systems Pacific
Order No:	23042700717
Date Completed:	April 28, 2023

Please note that no information was found for your site or adjacent properties.

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

Appendix D

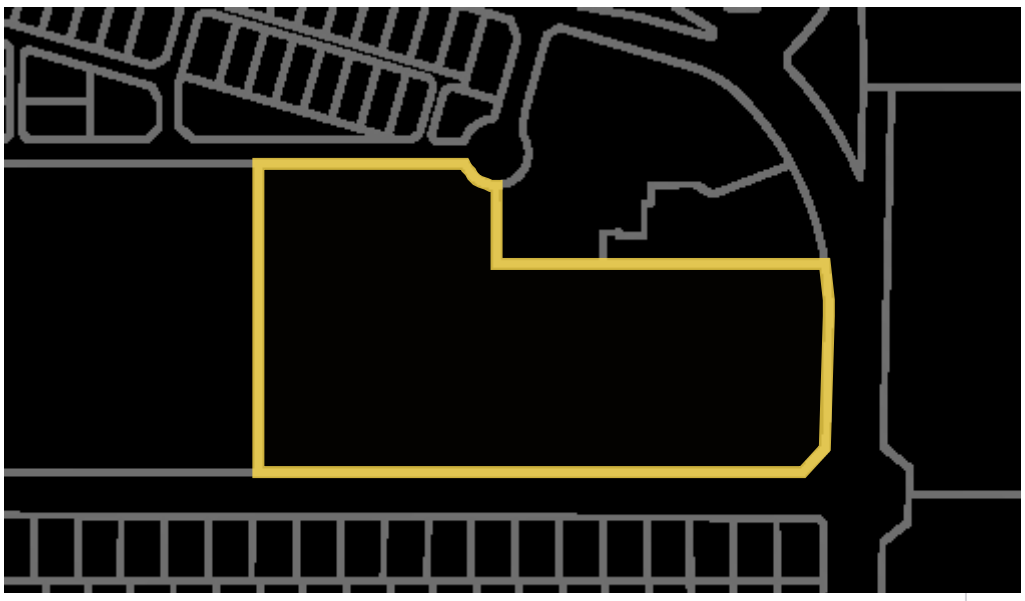
Additional Documentation

Assessor - County Clerk - Recorder
Riverside County, CA

General Information

Property Address	- No Situs -
Assessment No. (PIN)	677050023
APN (GeoCode)	677050023
Property Type	Vacant Land - Predominate Agricultural Use
TAG	019-061 CATHEDRAL CITY
Acreage	8.56
Doing Business As	
Business Use	

Legal Description
8.56 ACRES IN LOT 293 MB 300/053 TR 28639-1 Lot 293 SubdivisionName TR 28639-1 Acres 008.56 LotType Lot RecMapType Map Book MapPlatB 300 MapPlatP 053



Valuation data as of: **Thursday, March 02, 2023**

Valuation data updated weekly.

Transfer History

Date	Document #	Sale Price
7/11/2022	2022-0307341	$20,250,000
5/1/2013	2013-0207242	$0
12/13/2012	2012-0606062	$0
5/27/2011	2011-0236170	$50,000
6/11/2008	2008-0317028	$0
9/13/2005	2005-0753358	$0
1/1/2002	NAME00008649310	$0
2/2/2001	2001-0045398-S	$0
1/1/2001	COND00008649307	$0

Buildings

Buildings does not exist for this account.

Features does not exist for this account.

Land

Primary Use	Land Type	Acres	Eff. Frontage	Eff. Depth
Agricultural - Unrestricted	LandLine 01 / 677050023 / Agricultural - Unrestricted	8.56	0.00	0.00

Land Use Detail does not exist for this account.

Assessor - County Clerk - Recorder
Riverside County, CA

General Information

Property Address	- No Situs -
Assessment No. (PIN)	677050018
APN (GeoCode)	677050018
Property Type	Vacant Land - Predominate Agricultural Use
TAG	019-061 CATHEDRAL CITY
Acreage	18.12
Doing Business As	
Business Use	

Legal Description
18.12 ACRES IN LOT 275 MB 300/053 TR 28639-1 Lot 275 SubdivisionName TR 28639-1 Acres 018.12 LotType Lot RecMapType Map Book MapPlatB 300 MapPlatP 053 LOT 275 OF TRACT NO. 28639-1 AS SHOWN BY MAP ON FILE IN BOOK 300, PAGES 53 THROUGH 66 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA

Valuation data as of: **Thursday, March 02, 2023**

Valuation data updated weekly.

Transfer History

Date	Document #	Sale Price
7/11/2022	2022-0307341	$20,250,000
5/1/2013	2013-0207242	$0
12/13/2012	2012-0606062	$0
5/27/2011	2011-0236170	$50,000
6/11/2008	2008-0317028	$0
9/13/2005	2005-0753358	$0
1/1/2002	NAME00008649254	$0
2/2/2001	2001-0045398-S	$0
1/1/2001	COND00008649251	$0

Buildings

Buildings does not exist for this account.

Features does not exist for this account.

Land

Primary Use	Land Type	Acres	Eff. Frontage	Eff. Depth
Agricultural - Unrestricted	LandLine 01 / 677050018 / Agricultural - Unrestricted	18.12	0.00	0.00

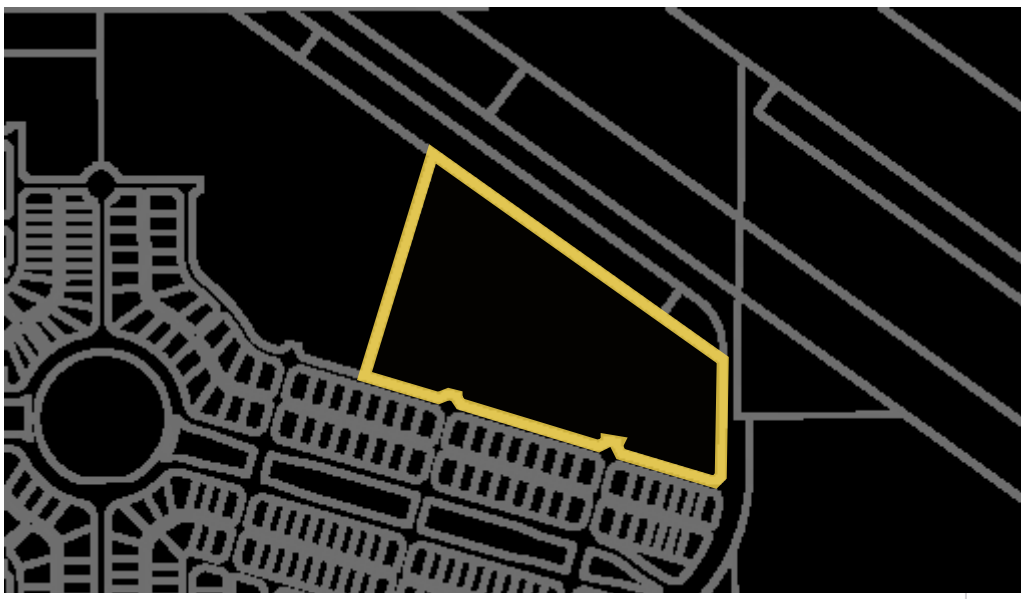
Land Use Detail does not exist for this account.

Assessor - County Clerk - Recorder
Riverside County, CA

General Information

Property Address	- No Situs -
Assessment No. (PIN)	677050017
APN (GeoCode)	677050017
Property Type	Vacant Land - Predominate Agricultural Use
TAG	019-061 CATHEDRAL CITY
Acreage	14.69
Doing Business As	
Business Use	

Legal Description
14.69 ACRES IN LOT 276 MB 300/053 TR 28639-1 Lot 276 SubdivisionName TR 28639-1 Acres 014.69 LotType Lot RecMapType Map Book MapPlatB 300 MapPlatP 053 LOT 276 OF TRACT NO. 28639-1 AS SHOWN BY MAP ON FILE IN BOOK 300, PAGES 53 THROUGH 66 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA



Valuation data as of: **Thursday, March 02, 2023**

Valuation data updated weekly.

Transfer History

Date	Document #	Sale Price
7/11/2022	2022-0307341	$20,250,000
5/1/2013	2013-0207242	$0
12/13/2012	2012-0606062	$0
5/27/2011	2011-0236170	$50,000
6/11/2008	2008-0317028	$0
9/13/2005	2005-0753358	$0
1/1/2002	NAME00008649237	$0
2/2/2001	2001-0045398-S	$0
1/1/2001	COND00008649234	$0

Buildings

Buildings does not exist for this account.

Features does not exist for this account.

Land

Primary Use	Land Type	Acres	Eff. Frontage	Eff. Depth
Agricultural - Unrestricted	LandLine 01 / 677050017 / Agricultural - Unrestricted	14.69	0.00	0.00

Land Use Detail does not exist for this account.

Assessor - County Clerk - Recorder
Riverside County, CA

General Information

Property Address	- No Situs -
Assessment No. (PIN)	677050015
APN (GeoCode)	677050015
Property Type	Vacant Land - Predominate Agricultural Use
TAG	019-061 CATHEDRAL CITY
Acreage	3.70
Doing Business As	
Business Use	

Legal Description
3.70 ACRES IN LOT 277 MB 300/053 TR 28639-1 Lot 277 SubdivisionName TR 28639-1 Acres 003.70 LotType Lot RecMapType Map Book MapPlatB 300 MapPlatP 053

Valuation data as of: **Thursday, March 02, 2023**

Valuation data updated weekly.

Transfer History

Date	Document #	Sale Price
7/11/2022	2022-0307341	$20,250,000
5/1/2013	2013-0207242	$0
12/13/2012	2012-0606062	$0
5/27/2011	2011-0236170	$50,000
6/11/2008	2008-0317028	$0
9/13/2005	2005-0753358	$0
1/1/2002	NAME00008649206	$0
2/2/2001	2001-0045398-S	$0
1/1/2001	COND00008649203	$0

Buildings

Buildings does not exist for this account.

Features does not exist for this account.

Land

Primary Use	Land Type	Acres	Eff. Frontage	Eff. Depth
Agricultural - Unrestricted	LandLine 01 / 677050015 / Agricultural - Unrestricted	3.70	0.00	0.00

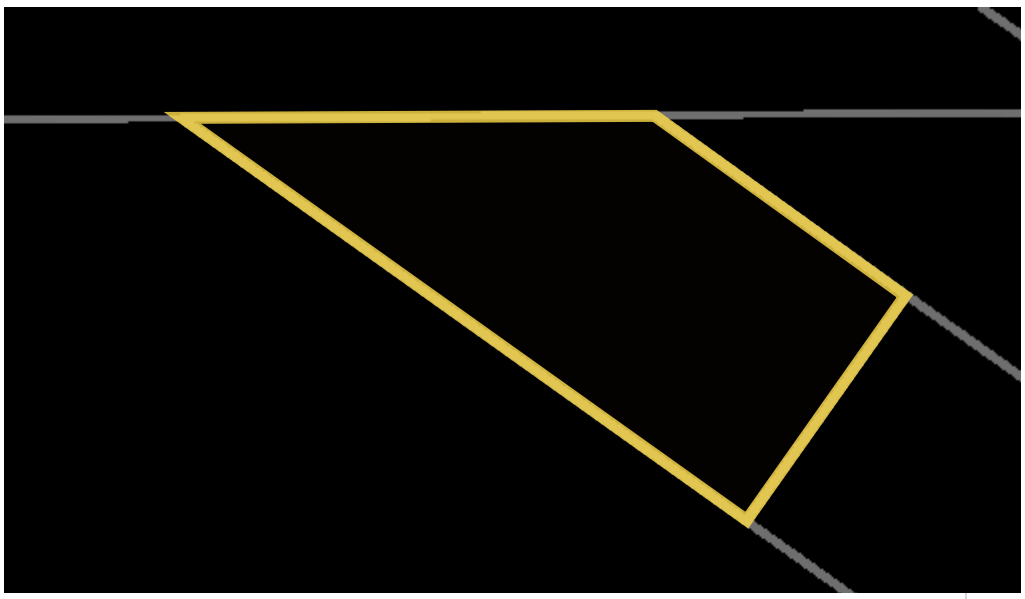
Land Use Detail does not exist for this account.

Assessor - County Clerk - Recorder
Riverside County, CA

General Information

Property Address	- No Situs -
Assessment No. (PIN)	677050016
APN (GeoCode)	677050016
Property Type	Vacant Residential Land - Other
TAG	019-061 CATHEDRAL CITY
Acreage	0.52
Doing Business As	
Business Use	

Legal Description
.52 ACRES IN LOT 299 MB 300/053 TR 28639-1 LOT 299 OF TRACT NO. 28639-1 ON FILE IN BOOK 300, PAGES 53-66 OF MAPS RECORDS OF RIVERSIDE COUNTY, CALIFORNIA Lot 299 SubdivisionName TR 28639-1 Acres 000.52 LotType Lot RecMapType Map Book MapPlatB 300 MapPlatP 053



Valuation data as of: **Thursday, March 02, 2023**

Valuation data updated weekly.

Transfer History

Date	Document #	Sale Price
7/11/2022	2022-0307341	$20,250,000
7/21/2015	2015-0337061	$2,108,000
6/19/2014	2014-0225889	$0
2/28/2006	2006-0142542	$0
9/13/2005	2005-0753358	$0
1/1/2002	NAME00008649225	$0
2/2/2001	2001-0045398-S	$0
1/1/2001	COND00008649222	$0

Buildings

Buildings does not exist for this account.

Features does not exist for this account.

Land

Primary Use	Land Type	Acres	Eff. Frontage	Eff. Depth
Residential	LandLine 01 / 677050016 / Residential	0.52	0.00	0.00

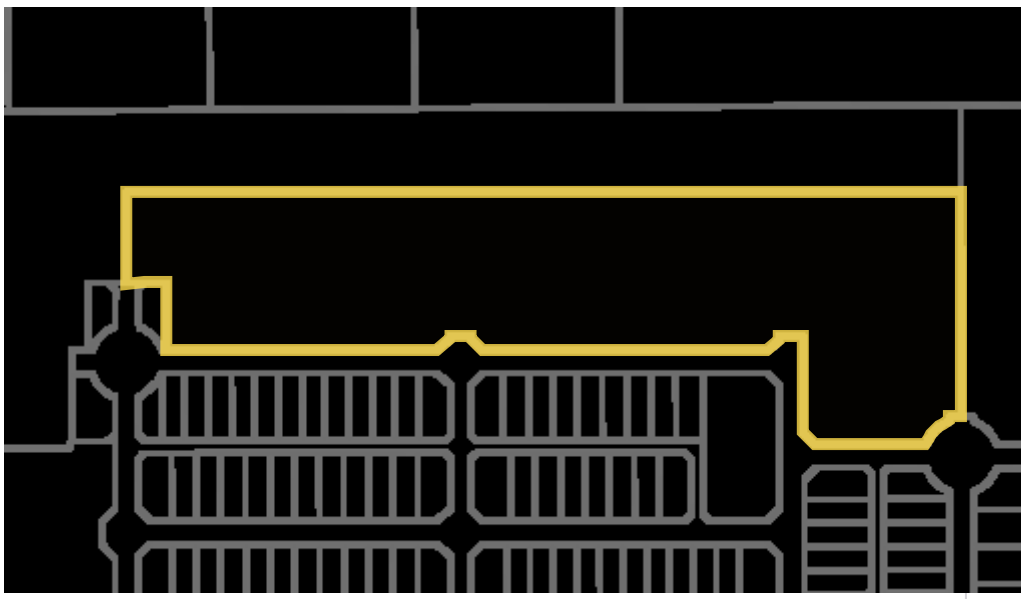
Land Use Detail does not exist for this account.

Assessor - County Clerk - Recorder
Riverside County, CA

General Information

Property Address	- No Situs -
Assessment No. (PIN)	677050027
APN (GeoCode)	677050027
Property Type	Vacant Land - Predominate Residential Use
TAG	019-061 CATHEDRAL CITY
Acreage	8.63
Doing Business As	
Business Use	

Legal Description
8.63 ACRES M/L IN POR LOT 273 MB 300/053 TR 28639-1 Lot 273 SubdivisionName TR 28639-1 Acres 008.63 M/L LotType Lot RecMapType Map Book MapPlatB 300 MapPlatP 053 PortionLot Portion



Valuation data as of: **Thursday, March 02, 2023**

Valuation data updated weekly.

Transfer History

Date	Document #	Sale Price
7/11/2022	2022-0307341	$20,250,000
7/21/2015	2015-0337061	$2,108,000
8/4/2014	2014-0292884	$0
7/11/2007	2007-0450576	$0
9/29/2006	2006-0720930-S	$0
2/3/2004	2004-0075871	$19,269,000

Buildings

Buildings does not exist for this account.

Features does not exist for this account.

Land

Primary Use	Land Type	Acres	Eff. Frontage	Eff. Depth
Agricultural - Unrestricted	LandLine 01 / 677050027 / Agricultural - Unrestricted	8.63	0.00	0.00

Land Use Detail does not exist for this account.

Assessor - County Clerk - Recorder
Riverside County, CA

General Information

Property Address	- No Situs -
Assessment No. (PIN)	677050031
APN (GeoCode)	677050031
Property Type	Vacant Land - Predominate Residential Use
TAG	019-061 CATHEDRAL CITY
Acreage	32.64
Doing Business As	
Business Use	

Legal Description
32.64 ACRES IN PAR 1 PM 220/008 PM 34148 PARCEL 1, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY PARCEL MAP 34148 ON FILE IN BOOK 220, PAGES 8-10 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY. SubdivisionName PM 34148 Acres 032.64 LotType Parcel Parcel 1 RecMapType Parcel Map MapPlatB 220 MapPlatP 008

Valuation data as of: **Thursday, March 02, 2023**

Valuation data updated weekly.

Transfer History

Date	Document #	Sale Price
7/11/2022	2022-0307341	$20,250,000
7/21/2015	2015-0337061	$2,108,000
8/4/2014	2014-0292884	$0
5/1/2013	2013-0207243	$0
5/27/2011	2011-0236170	$50,000
7/11/2007	2007-0450576	$0
1/5/2007	2007-0010707-D	$0
1/5/2007	2007-0010707-D	$0

Buildings

Buildings does not exist for this account.

Features does not exist for this account.

Land

Primary Use	Land Type	Acres	Eff. Frontage	Eff. Depth
Agricultural - Unrestricted	LandLine 01 / 677050031 / Agricultural - Unrestricted	32.64	0.00	0.00

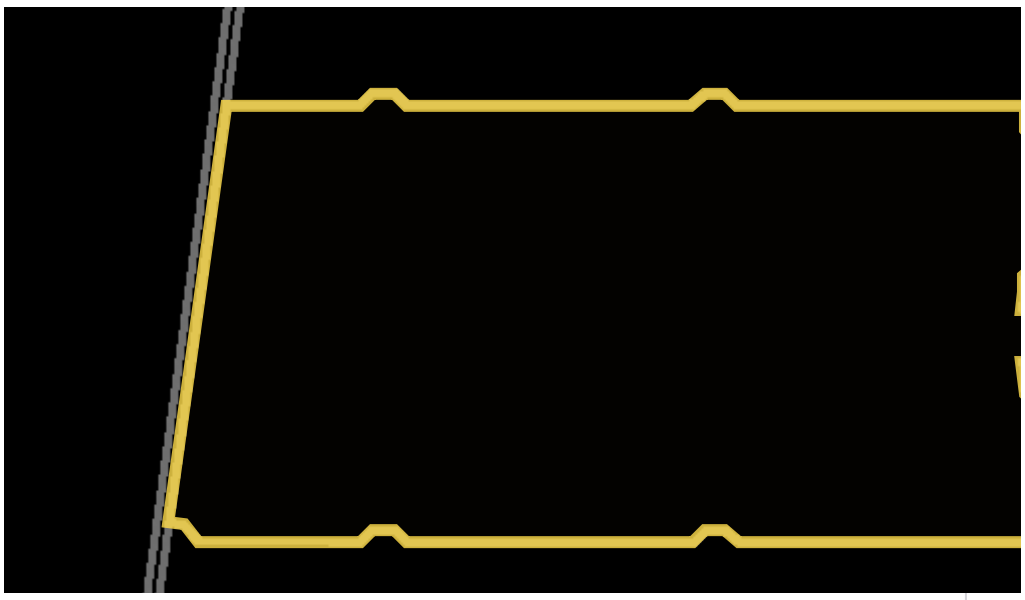
Land Use Detail does not exist for this account.

Assessor - County Clerk - Recorder
Riverside County, CA

General Information

Property Address	- No Situs -
Assessment No. (PIN)	677050032
APN (GeoCode)	677050032
Property Type	Vacant Land - Predominate Residential Use
TAG	019-061 CATHEDRAL CITY
Acreage	22.12
Doing Business As	
Business Use	

Legal Description
22.12 ACRES IN PAR 2 PM 220/008 PM 34148 PARCEL 2, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY PARCEL MAP 34148 ON FILE IN BOOK 220, PAGES 8-10 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY. SubdivisionName PM 34148 Acres 022.12 LotType Parcel Parcel 2 RecMapType Parcel Map MapPlatB 220 MapPlatP 008



Valuation data as of: **Thursday, March 02, 2023**

Valuation data updated weekly.

Transfer History

Date	Document #	Sale Price
7/11/2022	2022-0307341	$20,250,000
7/21/2015	2015-0337061	$2,108,000
8/4/2014	2014-0292884	$0
5/1/2013	2013-0207243	$0
5/27/2011	2011-0236170	$50,000
7/11/2007	2007-0450576	$0
1/5/2007	2007-0010707-D	$0
1/5/2007	2007-0010707-D	$0

Buildings

Buildings does not exist for this account.

Features does not exist for this account.

Land

Primary Use	Land Type	Acres	Eff. Frontage	Eff. Depth
Agricultural - Unrestricted	LandLine 01 / 677050032 / Agricultural - Unrestricted	22.12	0.00	0.00

Land Use Detail does not exist for this account.

Assessor - County Clerk - Recorder
Riverside County, CA

General Information

Property Address	- No Situs -
Assessment No. (PIN)	677050033
APN (GeoCode)	677050033
Property Type	Vacant Land - Predominate Residential Use
TAG	019-061 CATHEDRAL CITY
Acreage	11.69
Doing Business As	
Business Use	

Legal Description
11.69 ACRES IN PAR 3 PM 220/008 PM 34148 SubdivisionName PM 34148 Acres 011.69 LotType Parcel Parcel 3 RecMapType Parcel Map MapPlatB 220 MapPlatP 008

Valuation data as of: **Thursday, March 02, 2023**

Valuation data updated weekly.

Transfer History

Date	Document #	Sale Price
7/11/2022	2022-0307341	$20,250,000
7/21/2015	2015-0337061	$2,108,000
8/4/2014	2014-0292884	$0
5/1/2013	2013-0207243	$0
5/27/2011	2011-0236170	$50,000
7/11/2007	2007-0450576	$0
1/5/2007	2007-0010707-D	$0
1/5/2007	2007-0010707-D	$0

Buildings

Buildings does not exist for this account.

Features does not exist for this account.

Land

Primary Use	Land Type	Acres	Eff. Frontage	Eff. Depth
Agricultural - Unrestricted	LandLine 01 / 677050033 / Agricultural - Unrestricted	11.69	0.00	0.00

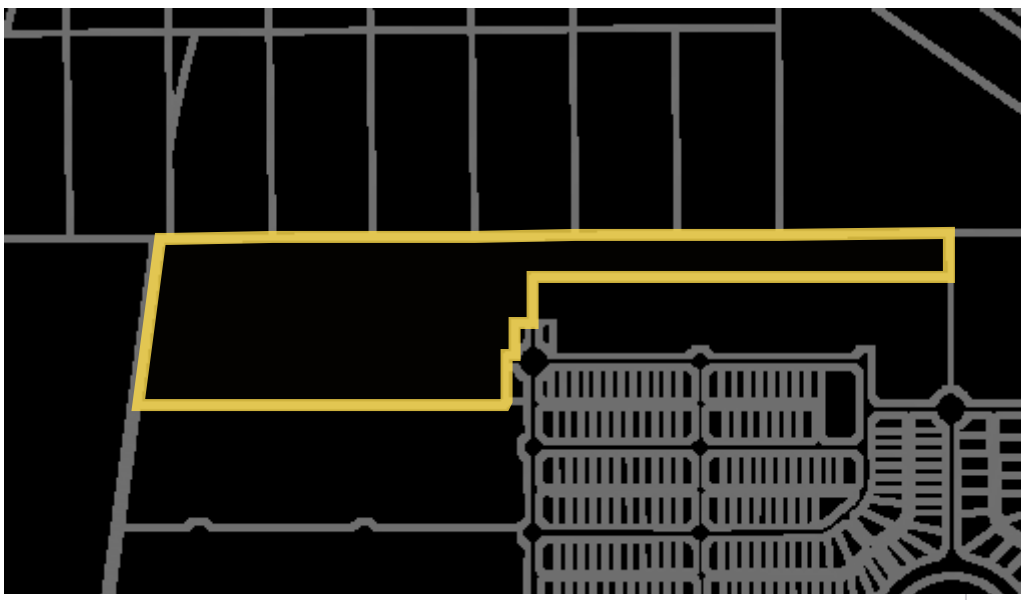
Land Use Detail does not exist for this account.

Assessor - County Clerk - Recorder
Riverside County, CA

General Information

Property Address	- No Situs -
Assessment No. (PIN)	677050034
APN (GeoCode)	677050034
Property Type	Vacant Land - Predominate Residential Use
TAG	019-061 CATHEDRAL CITY
Acreage	19.25
Doing Business As	
Business Use	

Legal Description
19.25 ACRES IN PAR 4 PM 220/008 PM 34148 PARCEL 4, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY PARCEL MAP 34148 ON FILE IN BOOK 220, PAGES 8-10 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY. SubdivisionName PM 34148 Acres 019.25 LotType Parcel Parcel 4 RecMapType Parcel Map MapPlatB 220 MapPlatP 008



Valuation data as of: Thursday, March 02, 2023

Valuation data updated weekly.

Transfer History

Date	Document #	Sale Price
7/11/2022	2022-0307341	$20,250,000
7/21/2015	2015-0337061	$2,108,000
8/4/2014	2014-0292884	$0
5/1/2013	2013-0207243	$0
5/27/2011	2011-0236170	$50,000
7/11/2007	2007-0450576	$0
1/5/2007	2007-0010707-D	$0
1/5/2007	2007-0010707-D	$0

Buildings

Buildings does not exist for this account.

Features does not exist for this account.

Land

Primary Use	Land Type	Acres	Eff. Frontage	Eff. Depth
Agricultural - Unrestricted	LandLine 01 / 677050034 / Agricultural - Unrestricted	19.25	0.00	0.00

Land Use Detail does not exist for this account.

Assessor - County Clerk - Recorder
Riverside County, CA

General Information

Property Address	- No Situs -
Assessment No. (PIN)	677050029
APN (GeoCode)	677050029
Property Type	Vacant Land - Predominate Residential Use
TAG	019-061 CATHEDRAL CITY
Acreage	1.20
Doing Business As	
Business Use	

Legal Description
1.20 ACRES M/L IN POR NW 1/4 OF SEC 5 T4S R5E FOR TOTAL DESCRIPTION SEE ASSESSORS MAPS TownshipN 4 Acres 001.20 M/L Section 05 Portion 1/4 Range 05 PortionDirection N RangeDirection E

Valuation data as of: **Thursday, March 02, 2023**

Valuation data updated weekly.

Transfer History

Date	Document #	Sale Price
7/11/2022	2022-0307341	$20,250,000
7/21/2015	2015-0337061	$2,108,000
8/4/2014	2014-0292884	$0
7/11/2007	2007-0450576	$0
1/5/2007	2007-0010707-S	$0

Buildings

Buildings does not exist for this account.

Features does not exist for this account.

Land

Primary Use	Land Type	Acres	Eff. Frontage	Eff. Depth
Agricultural - Unrestricted	LandLine 01 / 677050029 / Agricultural - Unrestricted	1.20	0.00	0.00

Land Use Detail does not exist for this account.

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY. NO LIABILITY IS ASSUMED FOR THE ACCURACY OF THE DATA SHOWN. ASSESSOR'S PARCEL MAY NOT COMPLY WITH LOCAL LOT-SPLIT OR BUILDING SITE ORDINANCES.

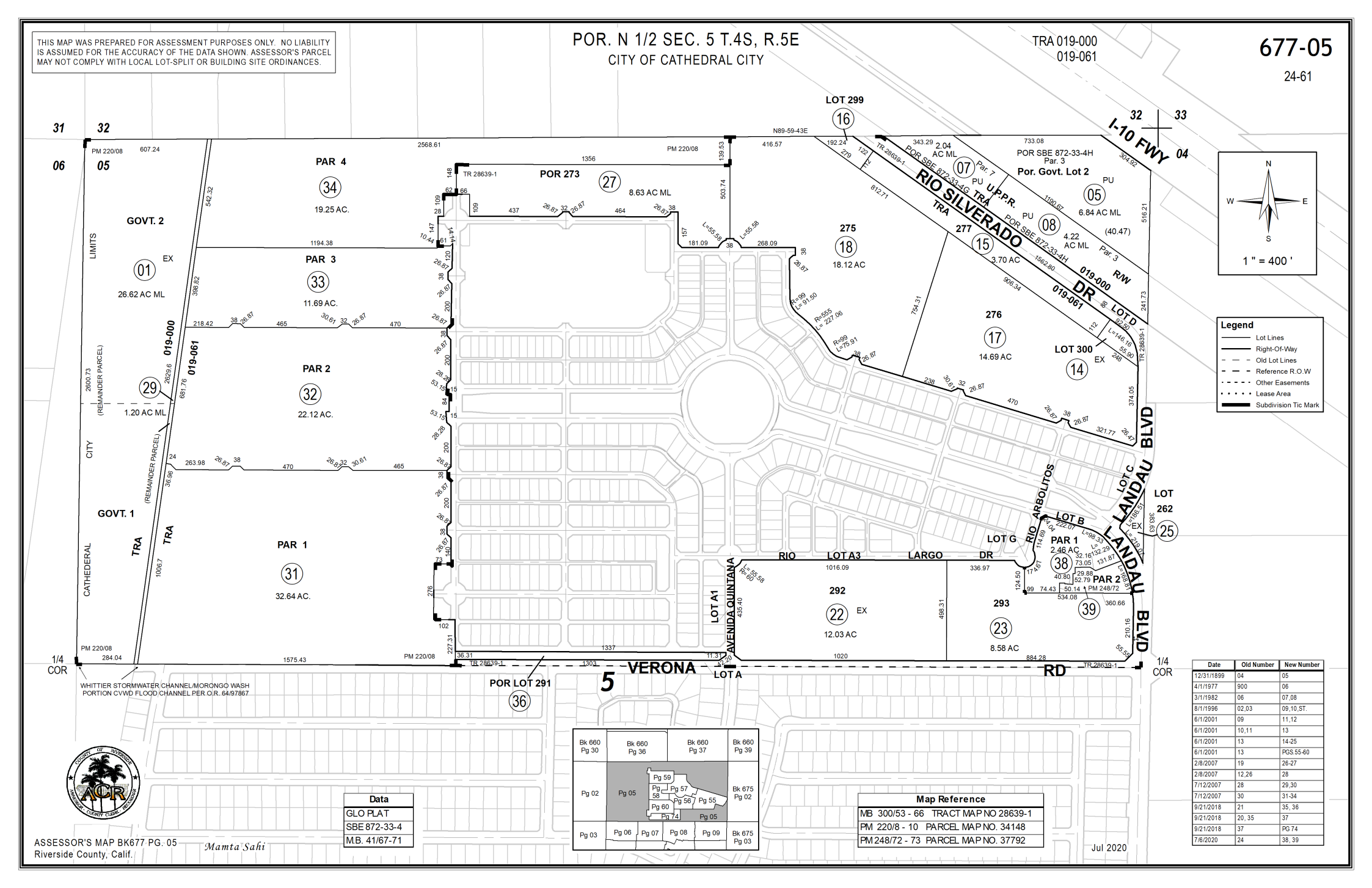
POR. N 1/2 SEC. 5 T.4S, R.5E

CITY OF CATHEDRAL CITY

TRA 019-000
019-061

677-05

24-61



Date	Old Number	New Number
12/31/1899	04	05
4/1/1977	900	06
3/1/1982	06	07,08
8/1/1996	02,03	09,10,ST.
6/1/2001	09	11,12
6/1/2001	10,11	13
6/1/2001	13	14-25
6/1/2001	13	PGS.55-60
2/8/2007	19	26-27
2/8/2007	12,26	28
7/12/2007	28	29,30
7/12/2007	30	31-34
9/21/2018	21	35, 36
9/21/2018	20, 35	37
9/21/2018	37	PG 74
7/6/2020	24	38, 39

Data
GLO PLAT
SBE 872-33-4
M.B. 41/67-71

Map Reference
MB 300/53 - 66 TRACT MAP NO 28639-1
PM 220/8 - 10 PARCEL MAP NO. 34148
PM 248/72 - 73 PARCEL MAP NO. 37792

ASSESSOR'S MAP BK677 PG. 05
Riverside County, Calif.

Mamta Sahi

Jul 2020

Flat Top Mtn. Deposit

Past Producer in Riverside county in California, United States with commodity Sand and Gravel, Construction

Map (https://www.google.com/maps/place/33.86394,-116.46335/@33.86394,-116.46335,12z/data=!3m1!1e3)

XML (/mrds/xml/10115745) JSON (/mrds/json/10115745) KML (/mrds/kml/10115745)

D (/mrds/grade-summary.php?dep_id=10115745)

Geologic information

Identification information

Deposit ID	10115745 (/mrds/show-mrds.php?dep_id=10115745)
MAS/MILS ID	0060650135
Record type	Site
Current site name	Flat Top Mtn. Deposit
Alternate or previous names	Flat Top Mtn Deposit

Geographic coordinates

Point of reference	Ore Body
Geographic coordinates:	-116.46335, 33.86394 (WGS84)
Elevation	229
Location accuracy	500 *(meters)*

Political divisions (FIPS codes)

Riverside (county)
California (state)
United States (country)
North America (continent)
Land (continent)

USGS map quadrangles

Cathedral City (quadrangle 1:24,000 scale)
Palm Springs (quadrangle 1:100,000 scale)
Santa Ana (quadrangle 1:250,000 scale)

Hydrologic units (watersheds)

Salton Sea (hydrologic unit)
Salton Sea (hydrologic accounting unit)
Southern Mojave-Salton Sea (hydrologic subregion)
California (hydrologic region)

Geographic areas

Country	State	County
United States	California	Riverside

Public Land Survey System information

Meridian	Township	Range	Section	Fraction	State
San Bernardino	003 S	005 E	33	SW	California

Commodities

Commodity	Importance
Sand and Gravel, Construction	Primary

Nearby scientific data

Ore Body (1) Quaternary alluvium and marine deposits (/geology/state/sgmc-unit.php?x=-116.46335&y=33.86394)

List (/general/near-point.php?x=-116.46335&y=33.86394&d=0.01&format=html)

Map (/mrds/map-graded.html?x=-116.46335&y=33.86394&z=14)

Economic information

Economic information about the deposit and operations

Operation type	Surface
Development status	Past Producer
Commodity type	Non-metallic
Significant	No

Land status

Ownership category	Unknown

Reference information

Links to other databases

Agency	Database name	Acronym	Record ID	Notes
U.S. Bureau of Mines	Minerals Availability System	MAS	0060650135	

Bibliographic references

Deposit

CALIF. DIV. MINES AND GEOL. OPEN-FILE REPORT 77-14, 1977,

Deposit

TABULATED LIST, P. 242, NO. 457.

Reporter information

Type	Date	Name	Affiliation	Comment
Reporter	31-MAR-1991	Ridenour, James	U.S. Bureau of Mines	

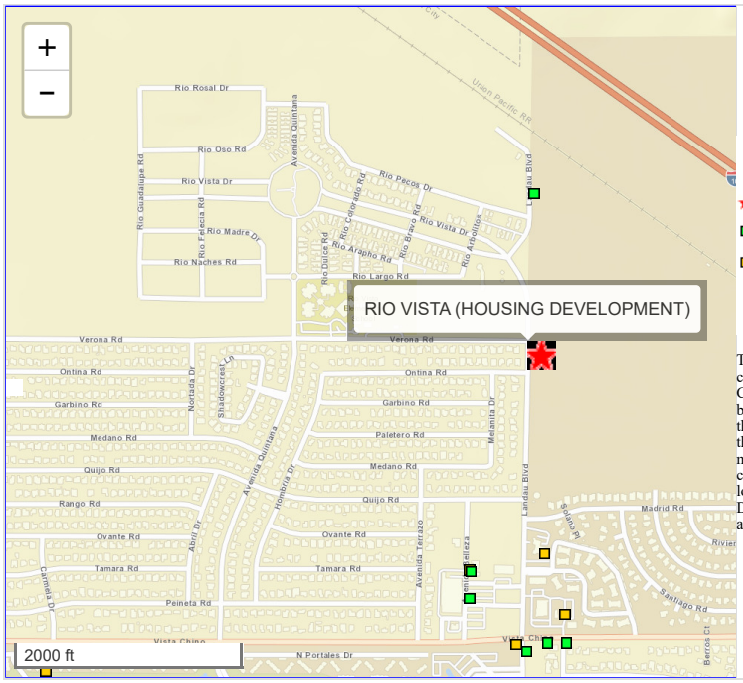
Related Topics: Envirofacts

FRS

FRS Facility Detail Report

RIO VISTA (HOUSING DEVELOPMENT)

EPA Registry Id: 110014324089
VERONA AND LANDAU STREETS
CATHEDRAL CITY, CA 92234



Legend

- Selected Facility
- EPA Facility of Interest
- State/Tribe Facility of Interest

The facility locations displayed come from the FRS Spatial Coordinates tables. They are the best representative locations for the displayed facilities based on the accuracy of the collection method and quality assurance checks performed against each location. The North American Datum of 1983 is used to display all coordinates.

Facility Registry Service Links:

- Facility Registry Service (FRS) Overview
- FRS Facility Query
- FRS Organization Query
- EZ Query
- FRS Physical Data Model
- FRS Geospatial Model

Report an Error

Environmental Interests

Information System	System Facility Name	Information System Id/Report Link	Environmental Interest Type	Data Source	Last Updated Date	Supplemental Environmental Interests:
ICIS-AIR (AIR)	RIO VISTA (HOUSING DEVELOPMENT)	0900000006065R9835	AIR MINOR	ICIS	10/19/2014	
AIR FACILITY SYSTEM	RIO VISTA (HOUSING DEVELOPMENT)	06065R9835	AIR MINOR (OPERATING)	AIRS/AFS	08/16/2011	

Additional EPA Reports: MyEnvironment Enforcement and Compliance Site Demographics Facility Coordinates Viewer Environmental Justice Map Viewer Watershed Report

Standard Industrial Classification Codes (SIC)

Data Source	SIC Code	Description	Primary
AIRS/AFS	1521	GENERAL CONTRACTORS-SINGLE-FAMILY HOUSES	

Facility Codes and Flags

EPA Region:	09
Duns Number:	
Congressional District Number:	36
Legislative District Number:	
HUC Code/Watershed:	18100200 / SALTON SEA
US Mexico Border Indicator:	NO
Federal Facility:	NO
Tribal Land:	NO

Alternative Names

No Alternative Names returned.

Organizations

No Organizations returned.

National Industry Classification System Codes (NAICS)

Data Source	NAICS Code	Description	Primary
AIRS/AFS	236115	NEW SINGLE-FAMILY HOUSING CONSTRUCTION (EXCEPT OPERATIVE BUILDERS).	

Facility Mailing Addresses

No Facility Mailing Addresses returned.

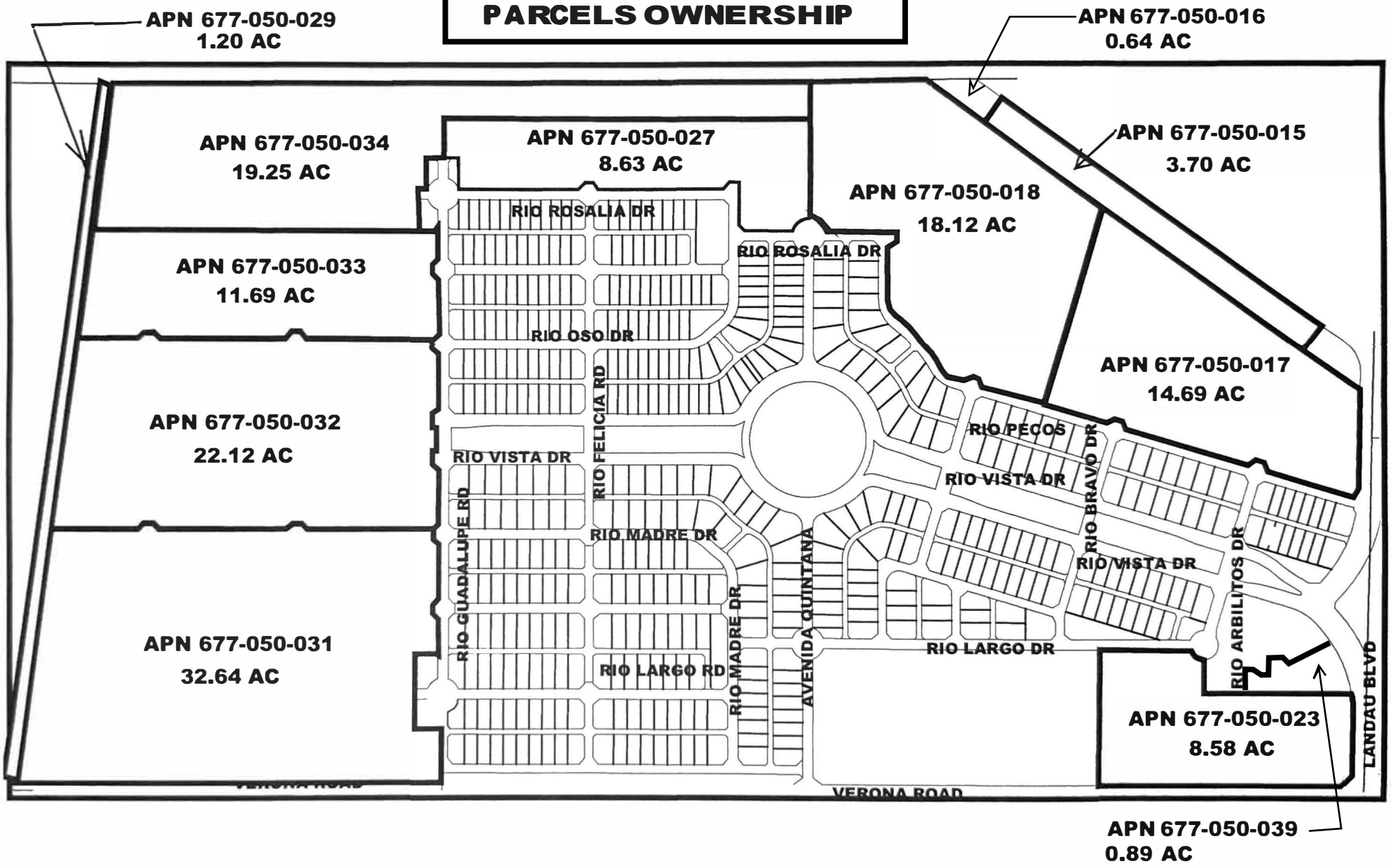
Contacts

No Contacts returned.

Query executed on: MAY-01-2023

Last updated on September 24, 2015

VERANO RECOVERY, LLC
PARCELS OWNERSHIP



Appendix E

Qualifications Statement

Earth Systems Pacific
Qualifications Statement for Environmental Work

The principals of the Earth Systems companies have been consulting for an average of over 20 years, and the combined staff numbers nearly 100. Earth Systems' multidisciplinary professional staff has extensive experience with and education in chemistry, geology, geophysics, hydrogeology, mechanical engineering, civil engineering, mapping, soil science, drafting, and surveying. Our senior project and staff professionals include Certified Engineering Geologists, Registered Geologists, Registered Environmental Assessors and Professional Engineers. These professionals are highly qualified, holding an average of two registrations and/or certifications in their area of expertise. To continue to meet our commitment to technical expertise, Earth Systems considers it essential to train our personnel in the latest scientific advancements in assessment and mitigation techniques. This involves continuing education in the form of training seminars, literature reviews, and pertinent conferences to remain abreast of recent developments in this complex and rapidly changing field.

The Environmental Professional [EP] who provided oversight for this project meets the qualifications specified by US EPA AAI and ASTM E1527-13. An EP is defined by US EPA AAI as "a person who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding conditions indicative of releases or threatened releases (of hazardous substances) on, at, in, or to a property, sufficient to meet the objectives and performance factors (of the rule)." In addition, an environmental professional must have:

- A state, tribal, or territory-issued certification or license (Professional Engineer or Professional Geologist) and three years of relevant full-time work experience; or
- A Baccalaureate degree or higher in science or engineering and five years of relevant full-time work experience; or
- Ten years of relevant full-time work experience.

The attached resumes describe the credentials of the professionals who performed field, research and/or report preparation work on the project.

Alexander Schriener Jr., P.G.

Associate Geologist

Mr. Schriener has over thirty-seven years as an alternative energy, natural resource and environmental geologist. He has seven years consulting experience specifically in the field of environmental geology. Mr. Schriener also manages geothermal energy services for Earth Systems.

Key Qualifications:

Mr. Schriener experience performing Phase I Environmental Site Assessments to evaluate the potential presence of soil and groundwater contamination at industrial, commercial, residential and agricultural properties, as well as vacant land. He has performed Phase II Investigations to evaluate whether contamination is actually present, and the concentration and extent of those contaminants. If contaminates are found, then site remediation is required. Mr. Schriener has successfully performed numerous Phase III site remediation and brought sites to closure with public agencies.

Mr. Schriener has over thirty years' experience in geothermal resource management, development and exploration.

Mr. Schriener has also been an expert witness in legal proceedings involving geothermal energy management and well drilling.

Relevant Project Experience:

Gasoline Station Investigation and Closure

Mr. Schriener was project manager for an assessment of gasoline stations with potential leaking underground storage tanks. He placed monitoring wells, completed groundwater and soil assessments and successfully got agency closure on 5 of 7 sites he was managed between 2004 and 2008.

Phase II Site Assessments and Phase III Site Closure

Mr. Schriener was project manager on numerous Phase II site assessments in the Coachella Valley and southern California. At each site, he selected the investigative methods, oversaw sampling and analysis activities, reviewed the laboratory data, and prepared a report meeting the requirements of the lender or agency. If contamination was found, Mr. Schriener prepared a work plan to mitigate the site and obtain closure. Significant sites that were evaluated and closure was obtained included several parcels of farm land over 20 acres each, a metal salvage yard, an industrial warehouse, a former cattle ranch and former sewage treatment facility.

Geothermal Exploration and Development

Mr. Schriener over thirty years' experience in geothermal energy including geology, geochemistry, geophysics, drilling, reservoir modeling, land leasing, exploration, and field development. He has managed the resource staff and activities in the three major geothermal fields in California: The Geysers, Coso and The Salton Sea, as well as Desert Peak in Nevada and Roosevelt/Blundell in Utah. Mr. Schriener has regularly managed an annual drilling and resource department budget of over $10 Million.

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REGISTRATIONS AND CERTIFICATIONS

Professional Geologist, State of California, 2001 (No. 7198)

EDUCATION

B.S., Geology
University of Washington
Seattle, Washington 1976

M.S., Geology
Oregon State University
Corvallis, Oregon 1978

MS Thesis; The Geology and Mineralization of the Northern Part of the Washougal Mining District, Skamania County, Washington.

Professional Affiliations:
Member: Geological Society of America
Member: American Association of Petroleum Geologists.
Member: Geothermal Resources Council

Publications
19 publications and field trip guidebooks, including published in: Geological Society of America, Association of Petroleum Geologists, United States Geological Survey Open File Report, Stanford Geothermal Program Conference, Geothermal Resources Council Transactions, Department of Energy, Journal of Scientific Drilling, and Geochemistry, Geophysics and Geosystems.

EMAIL

aschriener@earthsystems.com

PRIME OFFICE LOCATION

Bermuda Dunes, CA

Appendix F

Reliance Form

Application for Authorization to Rely on Environmental Report

This form serves as an application for third parties to apply for permission to use and rely on the referenced report [Report]. It is the applicant's responsibility to obtain the approval of the original client prior to submitting the form. As a condition of approval for authorization to use and rely on the referenced Report, applicant agrees to waive any conflict of interest arising out of, and applicant will not object to, our representation of our original client; that Earth Systems Pacific's liability for errors and omissions from the Report shall be limited to $15,000; and Earth Systems Pacific shall have no liability for any other cause or action. Use of this Report without written permission releases Earth Systems Pacific from any liability that may arise from the use of this Report.

Reference: *Report of Environmental Site Assessment, Verano Development, APNs 677-050-015, -016, -017, -018, -023, -027, -029, -031, -032, -033, & -034, W of Landau Boulevard & N of Verona Road, Cathedral City, Riverside County, California,* File No. 305289-002, Doc. No. 23-05-703, dated May 15, 2023.

Original Client: Northlight Capital Partners LLC, 55 Saugatuck Avenue, 1st Floor, Westport, CT 06880, Mr. Ben Gerig, CEO, 646-452-9973

To be completed by Applicant. **A processing fee of $200 made payable to Earth Systems Pacific must accompany application.** Submit to Earth Systems Pacific, 79811 Country Club Drive, Indio, California 92203. Signature signifies applicant's acceptance of the use and liability limitations described above, and caveats described below*.

_____ By:_____
(Company Name) (Print Name)

_____ _____
(Address) (Signature)

_____ Title:_____
(City, State, Zip)

_____ _____ Date:_____
(Telephone) (FAX)

Approval of Original Client

By:_____ _____
(Print Name) (Signature)

For Earth Systems Pacific's use only

_____ Approved for re-use with caveat that findings discussed in Report were based on available information and site conditions as noted at time of Report but may not be applicable to current site conditions.

_____ Disapproved (application fee to be refunded).

By:_____ Date:_____
(Earth Systems Pacific)

*Caveats - Applicant understands and agrees that the referenced Report is a copyrighted document, that Earth Systems Pacific is the copyright owner, and that unauthorized use or copying of the Report is strictly prohibited without the express written permission of Earth Systems Pacific. Applicant understands that Earth Systems Pacific may withhold such permission at its sole discretion, or grant permission upon such terms and conditions as it deems acceptable. Applicant acknowledges that: (1) Earth Systems Pacific did not have an opportunity to evaluate the applicant's relationship to the site; (2) Applicant-specific information can affect the conclusions and recommendations presented in the Report; (3) The Report speaks only to conditions observed onsite at the time of the site visit, and site conditions may have changed since that time; (4) The scope of the Report was limited to the scope defined by our proposal; (4) The shelf life of the Report, as defined by the EPA All Appropriate Inquiry [AAI] guidelines, is six months (the Report expires after six months and should not be relied upon without an update in accordance with the AAI guidelines); and, (5) Earth Systems Pacific maintains its contract with the original client for the Report.