

INLAND FEEDER – FOOTHILL PUMP STATION INTERTIE PROJECT

Initial Study/Mitigated Negative Declaration APPENDICES D-F

The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, CA 90012



Report Number ER 1694

May 2024

Appendix D
**Cultural Resources Assessment
(Public Version)**

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Cultural Resources Assessment

Prepared for

The Metropolitan Water District of Southern
California
700 North Alameda Street,
Los Angeles, California 90012

March 2024



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Prepared by

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Project Location:

Redlands (CA) USGS 7.5-minute Topographic Quad
Township 1 South, Range 3 West, Section 1

Acreage: Approx. 10.4 acres

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ACRONYMS AND OTHER ABBREVIATIONS

Acronym or Abbreviation	Definition
APE	Area of Potential Effects
B.P.	Before Present
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CRHR	California Register of Historical Resources
ESA	Environmental Science Associates
Metropolitan	Metropolitan Water District of Southern California
MLD	Most Likely Descendant
NAHC	Native American Heritage Commission
National Register	National Register of Historic Places
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
PRC	California Public Resources Code
SBVMWD	San Bernardino Valley Municipal Water District
SBVWCD	San Bernardino Valley Water Conservation District
SCCIC	South Central Coastal Information Center
USC	United States Code
USGS	U.S. Geological Survey

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INLAND FEEDER-FOOTHILL PUMP STATION INTERTIE PROJECT

Cultural Resources Assessment

Introduction

Environmental Science Associates (ESA) has been retained by The Metropolitan Water District of Southern California (Metropolitan) to conduct a cultural resources assessment for the Inland Feeder-Foothill Pump Station Intertie Project (proposed project). The Inland Feeder is owned and operated by Metropolitan and conveys approximately 1.7 billion gallons of water daily throughout its distribution system. Located in western San Bernardino and Riverside counties, the Inland Feeder is a 44-mile-long, 12-foot-diameter conveyance pipeline supporting reliable water delivery to Southern California. The primary purpose of the Inland Feeder is to connect State Water Project supplies to Metropolitan's Eastern Distribution System.

Project Personnel

ESA personnel involved in the preparation of this report are as follows: Principal Investigator James Clark, M.A., RPA; report author and archaeologist Claudia Camacho-Trejo, B.A.; archaeologist Ellen McIlvain, B.A.; and GIS specialist Chance Scott. Resumes of key personnel are included in **Appendix A**.

Project Location

The proposed project is located on an approximately 10-acre, triangular-shaped parcel immediately south of the intersection of Cone Camp Road and Greenspot Road in Highland, California (assessor's parcel numbers 1210381240000 and 1210381250000; referred to in this report as the project area). The site is generally accessible from State Route 210 (Foothill Freeway), located roughly 3.5 miles to the west. Local access to the project area is provided by Cone Camp Road, with an entrance gate immediately north and south of the Foothill Pump Station. The majority of the site is secured with chain-link perimeter fencing. The project area is bounded by Greenspot Road and residential development to the north, the Santa Ana River and open space to the south, and large-lot, single-family residences and open space to the east and west.

Metropolitan owns 5.47 acres of the project area and has easement rights to approximately 1 acre of the project area. The San Bernardino Valley Municipal Water District (SBVMWD) and the San Bernardino Valley Water Conservation District (SBVWCD) own the remainder of the project area. SBVWCD also owns the parcel directly south of Metropolitan's triangular-shaped fee property. Metropolitan will obtain an additional easement for the SBVWCD property located between the

Metropolitan Inland Feeder alignment and its fee property. The project location is shown in **Figure 1, Regional Location Map**. The proposed project facilities are shown in **Figure 2, Project Location Map**, and are situated within Section 1 of Township 1 South, Range 3 West of the Redlands (CA) U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle.

Project Description

To enhance Metropolitan’s water delivery flexibility in response to drought conditions and limited State Water Project (SWP) allocations, Metropolitan is proposing two new pipeline connections between the Inland Feeder and the SBVMWD-Inland Feeder Interconnection Line 1 and SBVMWD’s Foothill Pump Station (FPS).

Two new underground pipelines (supply connection and discharge connection), two underground vaults, four aboveground hydropneumatic surge tanks (HST), and associated appurtenant structures would be constructed in two stages as outlined below.

Stage 1 would include construction of the components mainly located within the existing fenced facility. This would include construction of an approximately 400-foot-long, 54-inch supply connection pipeline, an approximately 750-foot-long, 54-inch discharge connection pipeline, a 50-by-40-foot underground vault, four aboveground HSTs on concrete pads, and appurtenant structures. Additionally, the proposed project would include installation of a new fence-line along the western boundary of the project area to accommodate the supply and discharge connection components.

Stage 2 construction activities would occur along the southern portion of the project area, located mainly outside of the fenced facility, and would include a 45-by-40-foot underground vault, a portion of the 54-inch discharge connection pipeline, all associated appurtenant structures, and final connections to the existing Inland Feeder pipeline.

Most of the construction activities would occur during daylight hours, occasional nighttime construction activities may be required to shutdown the Inland Feeder and install the tie-in connection. Operation and maintenance activities at the FPS and Inland Feeder would be similar to existing conditions.

Area of Potential Effects

An Area of Potential Effects (APE) was established for the undertaking in accordance with Section 106 of the National Historic Preservation Act (NHPA). An APE is defined as:

... the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (36 Code of Federal Regulations [CFR] 800.16[d]).

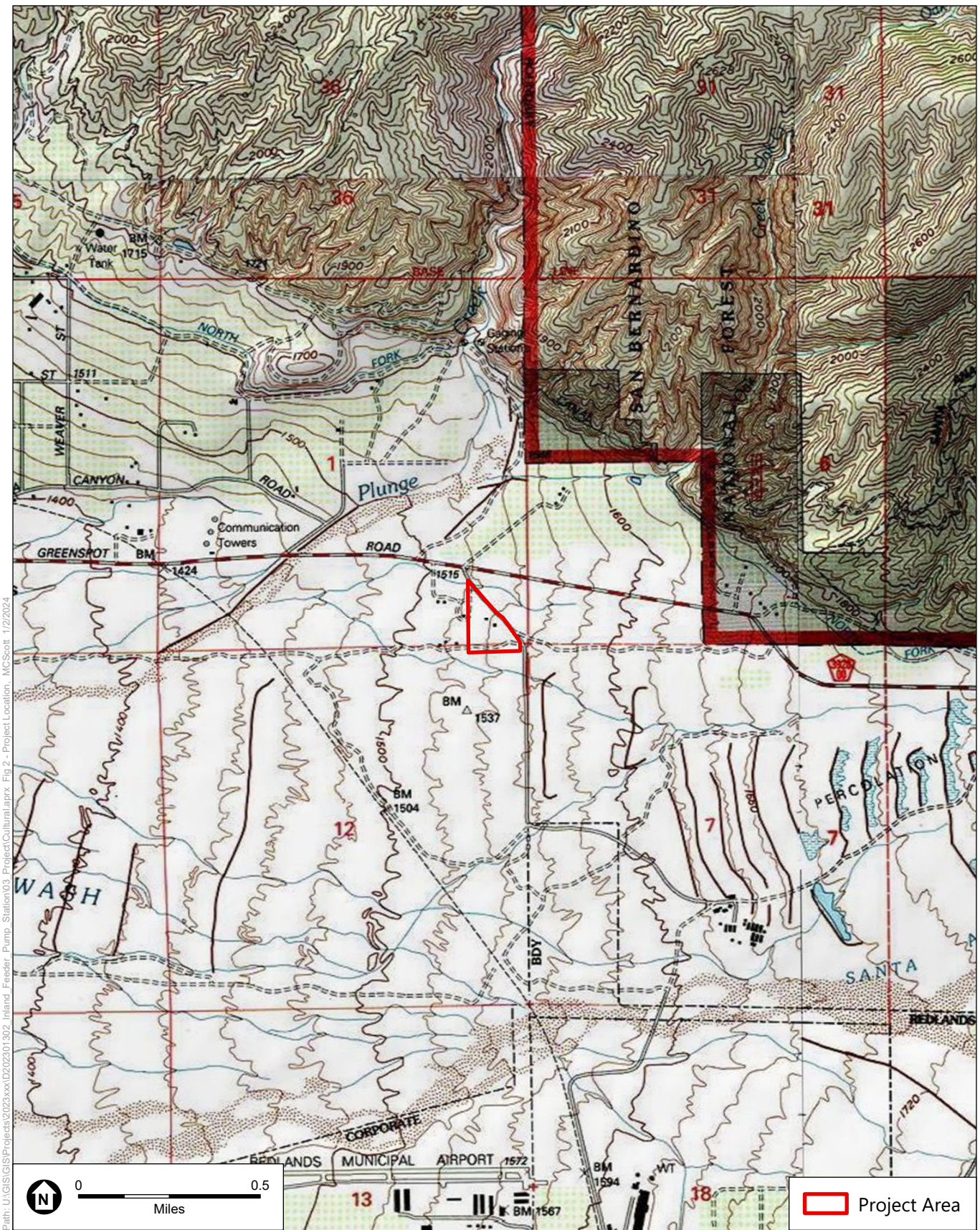


SOURCE: ESA, 2024

Inland Feeder Pump Station

Figure 1
Regional Location Map





SOURCE: ESA, 2024, USGS, 2023

Topo Quad: Redlands, 1980

Inland Feeder Pump Station

Figure 2
Project Location Map

The APE includes the area where project-related activities may directly or indirectly affect cultural resources. The total acreage for the horizontal APE is approximately 10 acres. The horizontal APE retains the level of anticipated disturbance. The vertical APE consists of the maximum depth of ground disturbance, which varies from 10 to 35 feet (**Figure 3, Area of Potential Effects [APE]**), given the nature of the undertaking, which would replace and enhance existing facilities or add underground pipelines, an indirect effects APE was not established.

Setting

Environmental Setting

The project site is located on the Peninsular and the south side of the Transverse Ranges border in the north and eastern part of the San Bernardino Valley. This section of San Bernardino Valley, known as Highland, comprises a slim belt of foothill slopes raised from the lowlands, skirting the southern base of the San Bernardino Mountains, and extending west over 10 miles from the gorge of the Santa Ana River. It comprises Quaternary-age young alluvial fan, channel, and wash deposits. Many different environments are recorded in the valley fill, including rivers, lakes, and broad alluvial fans. Alluvium, lake, playa, and terrace deposits at the surface range from the early Pleistocene to the Holocene (Morton and Miller 2006). Several fault systems are located within proximity of the project site.

Prehistoric Setting

The chronology of Southern California is typically divided into three general time periods: the Early Holocene (11,000 to 8,000 Before Present [B.P.]), the Middle Holocene (8,000 to 4,000 B.P.), and the Late Holocene (4,000 B.P. to A.D. 1769). This chronology is manifested in the archaeological record by particular artifacts and burial practices that indicate specific technologies, economic systems, trade networks, and other aspects of culture.

Early Holocene (11,000 to 8,000 B.P.)

While it is not certain when humans first came to California, their presence in Southern California by about 11,000 B.P. has been well documented. At Daisy Cave, on San Miguel Island, cultural remains have been radiocarbon dated to between 11,100 and 10,950 years B.P. (Byrd and Raab 2007). On the mainland, radiocarbon evidence confirms occupation of the Orange county and San Diego county coast by about 9,000 B.P., primarily in lagoon and river valley locations (Gallegos 2002). In western Riverside county, few Early Holocene sites are known to exist. One exception is site CA-RIV-2798, which contains deposits dating to as early as 8,580. B.P. (Grenda 1997). During the Early Holocene, the climate of Southern California became warmer and more arid and the human population, residing mainly in coastal or inland desert areas, began exploiting a wider range of plant and animal resources (Byrd and Raab 2007).

The primary Early Holocene cultural complex in coastal Southern California was the San Dieguito Complex, occurring between approximately 10,000 and 8,000 B.P. The people of the San Dieguito Complex inhabited the chaparral zones of southwestern California, exploiting the plant and animal resources of these ecological zones (Warren 1967). Leaf-shaped and large-stemmed projectile points, scraping tools, and crescentics are typical of San Dieguito Complex material culture.



Path: U:\GIS\GIS\Projects\2023\302\302\Inland_Feeder_Pump_Station\03_Project\Cultural.aprx Fig 3 - APE, MCScott 1/2/2024

SOURCE: ESA, 2024

Inland Feeder Pump Station

Figure 3
Area of Potential Effects

Middle Holocene (8,000 to 4,000 B.P.)

During the Middle Holocene, there is evidence for the processing of acorns for food and a shift toward a more generalized economy in coastal and inland Southern California. During this period, the processing of plant foods—particularly acorns—increased, a wider variety of animals were hunted, and trade with neighboring regions intensified (Byrd and Raab 2007).

The Middle Holocene La Jolla (8,000–4,000 B.P.) Complex is essentially a continuation of the San Dieguito Complex. La Jolla groups lived in chaparral zones or along the coast, often migrating between the two. Coastal settlement focused on the bays and estuaries of coastal Orange and San Diego counties. La Jolla peoples produced large, coarse stone tools, but also produced well-made projectile points and milling slabs. The La Jolla Complex represents a period of population growth and increasing social complexity, and it was also during this period that the first evidence of the exploitation of marine resources and the grinding of seeds for flour appears, as indicated by the abundance of millings in the archaeological record (Byrd and Raab 2007).

Contemporary with the La Jolla Complex, the Pauma Complex has been defined at coastal and adjacent inland sites in San Diego and Orange counties, as well as in inland Riverside county (True 1958). The Pauma Complex is similar in technology to the La Jolla Complex; however, evidence of coastal subsistence is absent from Pauma Complex sites (Moratto 1984). The Pauma and La Jolla Complexes may either be indicative of separate inland and coastal groups with similar subsistence and technological adaptations, or, alternatively, may represent inland and coastal phases of one group's seasonal rounds. The latter hypothesis is supported by the lack of hidden and deeply buried artifacts at Pauma sites, indicating that these sites may have been temporary camps for resource gathering and processing.

Late Holocene (4,000 B.P. to A.D. 1769)

During the Late Holocene, native populations of Southern California were becoming less mobile, and populations began to gather in small sedentary villages with satellite resource-gathering camps (Byrd and Raab 2007). Evidence indicates that the overexploitation of larger, high-ranked food resources may have led to a shift in subsistence towards a focus on acquiring greater amounts of smaller resources, such as shellfish and small-seeded plants (Byrd and Raab 2007).

Around 1,000 B.P., there was an episode of sustained drought, known as the Medieval Climatic Anomaly. While the effects of this environmental change on prehistoric populations are still debated, it likely led to changes in subsistence strategies to deal with the substantial stress on resources (Jones and Schwitalla 2008). In coastal Southern California, beginning before the Medieval Climatic Anomaly but possibly accelerated by it, conditions became drier, and many lagoons had been transformed into saltwater marshes. Because of this, populations abandoned coastal mesa and ridge tops to settle nearer to permanent freshwater resources (Gallegos 2002).

Trade intensity reached its zenith in the Late Holocene, with asphaltum (tar), seashells and steatite being traded from Southern California to the Great Basin. Major technological changes appeared as well, particularly with the advent of the bow and arrow, which largely replaced the use of the dart and atlatl (Byrd and Raab 2007). Small projectile points, ceramics, including Tizon

brownware pottery, and obsidian from Obsidian Butte (Imperial county), are all representative artifacts of the Late Holocene.

It has been postulated that as early as 3,500 B.P., a Takic-speaking people arrived in coastal Los Angeles and Orange counties, having migrated west from inland desert regions (Kroeber 1925; Warren 1968; Sutton 2009). By around 1,500 to 1,000 B.P., Takic language and cultures had spread to the south and inland to the east. These new arrivals, linguistically and culturally different from earlier coastal populations, may have brought new settlement and subsistence systems with them, along with other new cultural elements. This migration has been postulated as being a factor in several of the significant changes in material culture seen in the Late Holocene (such as the use of smaller projectile points and pottery), as well as the introduction of cremation as a burial practice.

The San Luis Rey (divided into San Luis Rey I [AD 1400 to 1750] and San Luis Rey II [AD 1750 to 1850]) cultures represented the Late Period in southwestern Riverside county, northern San Diego county, southern Los Angeles county, and the interior mountains of Orange county (Meighan 1954; Moratto 1984). San Luis Rey I village sites contain manos (hand stones), metates (grinding slabs), bedrock mortars, shell artifacts, and triangular arrow points. In addition to these features, San Luis Rey II sites are characterized by the presence of pottery, pictographs, and the cremation of the dead (Moratto 1984).

San Luis Rey settlement patterns in the upper San Luis Rey River drainage are typified by seasonally occupied lowland villages located in proximity to water sources, and highland villages occupied in the late summer and fall for acorn collection (True and Waugh 1982). However, settlement patterns within southwestern Riverside county are less well known. The available information, stemming primarily from survey data, indicates that four primary site types existed within the region during the Late Period: field camps, resource procurement locations, residential bases, and villages (Mason 1999). Resource procurement locations and field camps, the most common site types, contain a limited assemblage of artifacts and subsistence remains, primarily lithic debitage, some tools, fire affected rock, and small amounts of animal bones and charred seeds and nuts. This indicates that these types of sites were used primarily for focused activities and short-term occupancy.

Villages and residential bases, on the other hand, show evidence for long-term occupation by large groups of people. Villages were occupied year-round, while residential bases were occupied seasonally. Artifacts and features found at both village and residential bases, including large amounts of faunal and botanical remains, numerous high-quality tools, fire-affected rock, and anthrosols, indicate a wide range of activities (Mason 1999). Bedrock mortars point to the processing of seeds and acorns, and ceremonial activities are evidenced by the presence of pictographs, petroglyphs, and cupules within village sites.

Ethnographic setting

Maara'yam

At the time of contact, San Bernardino county was occupied by two groups, the Maara'yam (referred to as the Serrano in ethnographic literature) and the Cahuilla, though the area of the undertaking was largely occupied by the Maara'yam. The Maara'yam speak a dialect of the Takic family of the Uto-Aztecan language group. The extent of Maara'yam ancestral territory, which includes the mountain regions occupied by the Mountain Maara'yam and desert region occupied by the Desert Maara'yam, sometimes referred to as "Vanyume". Maara'yam ancestral territory includes the Antelope Valley to the west, the southwest Mojave Desert to the north, portions of the San Gabriel and San Bernardino Mountains at its center, the Inland Empire north of the city of Riverside to the south, and the city of Twentynine Palms to the east (San Manuel Band of Mission Indians 2022).

The Maara'yam lived in seasonal rounds and utilized resources in specific locations at different times of year, such as acorns, piñon nuts, yucca, mesquite, cacti, chia, deer, bighorn sheep, antelope, rabbits, small rodents, and birds (primarily quail) (Bean and Smith 1978). The Maara'yam used shell, bone, feathers, wood, stone, and plant fibers in the manufacture of their material culture, including basketry, blankets, and clothing. The Maara'yam, and many neighboring language groups, were organized into independent but interconnected village communities. These villages consisted of extended families residing in circular, dome-shaped structures made of willow frames covered with tule thatching, also known as a *kiic* (Bean and Smith 1978). Each of these villages consisted of one or more patrilineal clans that belonged to one of two exogamous moieties, either coyote or wildcat. The clan-based villages and the larger moiety groups maintained complex ceremonial, familial, and political relationships with one another (Gifford 1918; Strong 1929). Frequently, a number of communities would combine to celebrate important festivals, harvest cycles, and other ceremonial events, occasionally inviting distant, linguistically unrelated groups. The APE covers a broad area and was potentially known and visited by separate groups. However, the northern slopes of the San Bernardino Mountains appear to have fallen within the territory of the Apihavatum, a Maara'yam clan whose primary village was located at the present-day Arrowhead Hot Springs. The village, as well as the entire region, was known as *Apihanava t* or *Apuiva 't* (Strong 1929).

Historic Setting

Spanish Period (1769–1821)

The first European to cross into San Bernardino County was Pedro Fages, who entered the area in 1772. Fages was in pursuit of deserting Spanish soldiers. In 1774 and 1776, Juan Batista de Anza crossed into San Bernardino Valley. With the establishment of the Mission System in California, catastrophe was wrought on Native American communities, their social fabric, and lifeways. Much of the Maara'yam were removed from the Antelope Valley, the Mojave River region, and the Inland Empire to the San Gabriel Mission, established in 1771 (San Manuel Band of Mission Indians 2022). The first attempt by Spanish missionaries to settle the valley was short-lived and unsuccessful. In 1810, Father Dumetz set out from the San Gabriel Mission to establish a mission station adjacent to an Indian village on the Santa Ana River. The station, called Politana, was

largely destroyed by an earthquake in 1812. Shortly thereafter, the mission station was raided by non-local Indians and the settlement was abandoned (Scott 1976).

In 1819, Spanish Missionaries attempted to establish another mission outpost in the San Bernardino Valley. The outpost, called Estancia San Bernardino, was located in the area around what is presently the city of Redlands. The estancia's overseers compelled local Maara'yam and other indigenous communities to work as laborers building infrastructure to support the outpost (San Manuel Band of Mission Indians 2022). One such piece of infrastructure established via the labor of the Maara'yam was the Mill Creek Zanja, an irrigation system that allowed for the watering of the estancia's agricultural fields and served the local population for 60 years (Hertzberg 1976; San Manuel Band of Mission Indians 2022)

Mexican Period (1821–1846)

Mexico received its independence from Spain in 1821 and secularized the Spanish Missions in 1834. In 1842, Mexican settlers began to populate the eastern portion of the San Bernardino Valley. The same year, the Mexican Governor of California granted the majority of east San Bernardino Valley, including the Estancia San Bernardino, to Don Antonio Lugo's sons—Jose del Carmen, Jose Maria, and Vincente—along with their cousin, Diego Sepulveda. The land was used primarily for cattle ranching and was known as San Bernardino Rancho. The Lugos subsequently sold off parcels of the rancho to incoming Mormon settlers in the early 1850s, including the sale of the estancia in 1852 (Hertzberg 1976; Scott 1976).

American Period (1846–Present)

Mexico ceded California to the United States as part of the Treaty of Guadalupe Hidalgo, which ended the Mexican American War (1846–1848). The treaty also recognized rights of Mexican citizens to retain ownership of land granted to them by Spanish or Mexican authorities. However, the claimant was required to prove their right to the land before a patent was given. The process was lengthy and costly, and generally resulted in the claimant losing at least a portion of their land to attorney's fees and other costs associated with proving ownership (Starr 2007).

The Gold Rush (1849–1855) saw the first big influx of American settlers to California. In San Bernardino county, Mormon settlers entered the San Bernardino Valley in 1851 and purchased 37,000 acres from the Lugos for \$75,000. The Mormon pioneers established the town of San Bernardino, along with other settlements along the Santa Ana River, and created new irrigation systems such as the Tenny Ditch. In 1857, the Mormon colony was recalled to Salt Lake City and many of the settlers were forced to sell off their lands at a loss. New residents of the valley continued to divert water from the Santa Ana River and Mill Creek to expand local agricultural production (Hertzberg 1976). Over the next 20 years, as the population and agriculture increased, so did the scale of the region's irrigation systems.

With the influx of settlers came increased private land ownership within the ancestral lands of the Maara'yam as ranches, farms, mines, and logging camps were established in the region. As a result, the Maara'yam who still inhabited their ancestral lands were subject to violence by the new settlers and forced into marginal areas of the San Bernardino Valley (San Manuel Band of

Mission Indians 2022). In 1866, San Bernardino militia units began terrorizing Maara'yam in the Big Bear region, killing many, causing the local Maara'yam tribal head, Santos Manuel, to lead his *Yuhaaviatam* (People of the Pines) clan of 20–30 persons away from their mountain territory (San Manuel Band of Mission Indians 2022).

Following removal from their mountain homeland, the *Yuhaaviatam* inhabited the San Bernardino Valley along Warm Creek, and over a period of a decade settled in various areas such as what is presently the National Orange Show Event Center in San Bernardino, Meadowbrook Park, and Harlem Springs (San Manuel Band of Mission Indians 2022). In 1891, the *Yuhaaviatam* were removed to the San Manuel Reservation.

Regulatory Framework

There are various laws and regulations that require federal, state, and local agencies to consider the impact of a project on cultural resources. These laws and regulations specify a compliance process, outline the responsibilities of the different agencies involved in proposing the action, and establish the relationship between other relevant agencies.

Federal

Section 106 of the NHPA

Archaeological resources are protected through the NHPA of 1966, as amended (16 United States Code [USC] 470f), and its implementing regulation, Protection of Historic Properties (36 CFR Part 800), the Archaeological and Historic Preservation Act of 1974, and the Archaeological Resources Protection Act of 1979. Prior to implementing an “undertaking” (e.g., issuing a federal permit), Section 106 of the NHPA requires federal agencies to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation and the State Historic Preservation Officer a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing in the National Register of Historic Places (National Register). As indicated in Section 101(d)(6)(A) of the NHPA, properties of traditional religious and cultural importance to a tribe are eligible for inclusion in the National Register. Under the NHPA, a resource is considered significant if it meets the National Register listing criteria at 36 CFR 60.4.

National Register of Historic Places

The National Register was established by the NHPA of 1966, as “an authoritative guide to be used by federal, State, and local governments, private groups and citizens to identify the Nation’s historic resources and to indicate what properties should be considered for protection from destruction or impairment” (36 CFR 60.2). The National Register recognizes a broad range of cultural resources that are significant at the national, state, and local levels and can include districts, buildings, structures, objects, prehistoric archaeological sites, historic-period archaeological sites, traditional cultural properties, and cultural landscapes. As noted above, a resource that is listed in or eligible for listing in the National Register is considered “historic property” under Section 106 of the NHPA.

To be eligible for listing in the National Register, a property must be significant in American history, architecture, archaeology, engineering, or culture. Properties of potential significance must meet one or more of the following four established criteria:

- A. Are associated with events that have made a significant contribution to the broad patterns of our history;
- B. Are associated with the lives of persons significant in our past;
- C. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. Have yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting one or more of the criteria of significance, a property must have integrity. Integrity is defined as “the ability of a property to convey its significance.” The National Register recognizes seven qualities that, in various combinations, define integrity. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance.

Ordinarily religious properties, moved properties, birthplaces or graves, cemeteries, reconstructed properties, commemorative properties, and properties that have achieved significance within the past 50 years are not considered eligible for the National Register unless they meet one of the Criteria Considerations (a–g) below, in addition to meeting at least one of the four significance criteria A–D above, and retaining integrity (36 CFR 60.4):

- a. A religious property deriving primary significance from architectural or artistic distinction or historical importance; or
- b. A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- c. A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life.
- d. A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
- e. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
- f. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
- g. A property achieving significance within the past 50 years if it is of exceptional importance.

State

California Environmental Quality Act

The California Environmental Quality Act (CEQA) is the principal statute governing environmental review of projects occurring in the state and is codified at California Public Resources Code (PRC) Section 21000 et seq. CEQA requires lead agencies to determine if a proposed project would have a significant effect on the environment, including significant effects on historical or unique archaeological resources. Under CEQA (Section 21084.1), a project 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.

The CEQA Guidelines (Title 14 California Code of Regulations [CCR] Section 15064.5) recognize that historical resources include (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); (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); and (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 by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record. The fact that a resource does not meet the three criteria outlined above does not preclude the lead agency from determining that the resource may be an historical resource as defined in PRC Sections 5020.1(j) or 5024.1.

If a lead agency determines that an archaeological site is a historical resource, the provisions of Section 21084.1 of CEQA and Section 15064.5 of the CEQA Guidelines apply. If an archaeological site does not meet the criteria for a historical resource contained in the CEQA Guidelines, then the site may be treated in accordance with the provisions of Section 21083, which is as a unique archaeological resource. As defined in Section 21083.2 of CEQA a "unique" archaeological resource is an archaeological artifact, object, or site, about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

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

If an archaeological site meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site is to be treated in accordance with the provisions of Section 21083.2, which state that if the lead agency determines that a project would have a significant effect on unique archaeological resources, the lead agency may require reasonable efforts be

made to permit any or all of these resources to be preserved in place (Section 21083.1[a]). If preservation in place is not feasible, mitigation measures shall be required. The CEQA Guidelines note that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064.5[c][4]).

A significant effect under CEQA would occur if a project results in a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5(a). Substantial adverse change is defined as “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired” (CEQA Guidelines Section 15064.5[b][1]). According to CEQA Guidelines Section 15064.5(b)(2), the significance of a historical resource is materially impaired when a project demolishes or materially alters in an adverse manner those physical characteristics that:

- A. Convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the CRHR; or
- B. 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 a 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. Convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a Lead Agency for purposes of CEQA.

In general, a project that complies with the *Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (Grimmer 2017) is considered to have mitigated its impacts to historical resources to a less-than-significant level (CEQA Guidelines Section 15064.5[b][3]).

California Register of Historical Resources

The CRHR is “an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change” (PRC Section 5024.1[a]). The criteria for eligibility for the CRHR are based upon National Register of Historic Places (NRHP) criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the CRHR, including California properties formally determined eligible for, or listed in, the NRHP.

To be eligible for the CRHR, a prehistoric or historic-period property must be significant at the local, state, and/or federal level under one or more of the following four criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.
2. Is associated with the lives of persons important in our past.

3. 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.
4. Has yielded, or may be likely to yield, information important in prehistory or history.

A resource eligible for the CRHR must meet one of the criteria of significance described above, and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. It is possible that a historic resource may not retain sufficient integrity to meet the criteria for listing in the NRHP, but it may still be eligible for listing in the CRHR.

Additionally, the CRHR consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The CRHR automatically includes the following:

- California properties listed on the NRHP and those formally determined eligible for the NRHP.
- California Registered Historical Landmarks from No. 770 onward.
- Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Commission for inclusion on the CRHR.

Other resources that may be nominated to the CRHR include the following:

- Historical resources with a significance rating of Category 3 through 5 (those properties identified as eligible for listing in the NRHP, the CRHR, and/or a local jurisdiction register).
- Individual historical resources.
- Historical resources contributing to historic districts.
- Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

California Health and Safety Code Section 7050.5

California Health and Safety Code Section 7050.5 requires that in the event human remains are discovered, the County Coroner be contacted to determine the nature of the remains. In the event the remains are determined to be Native American in origin, the Coroner is required to contact the California NAHC within 24 hours to relinquish jurisdiction.

California Public Resources Code Section 5097.98

PRC Section 5097.98, as amended by Assembly Bill 2641, provides procedures in the event human remains of Native American origin are discovered during project implementation. PRC Section 5097.98 requires that no further disturbances occur in the immediate vicinity of the discovery, that the discovery is adequately protected according to generally accepted cultural and archaeological standards, and that further activities take into account the possibility of multiple burials. PRC Section 5097.98 further requires the NAHC, upon notification by a County Coroner, designate and notify a Most Likely Descendant (MLD) regarding the discovery of Native American human remains. Once the MLD has been granted access to the site by the landowner

and inspected the discovery, the MLD then has 48 hours to provide recommendations to the landowner for the treatment of the human remains and any associated grave goods.

In the event that no descendant is identified, or the descendant fails to make a recommendation for disposition, or if the landowner rejects the recommendation of the descendant, the landowner may, with appropriate dignity, reinter the remains and burial items on the property in a location that will not be subject to further disturbance.

Archival Research

South Central Coastal Information Center Records Search

On December 15, 2023, ESA staff conducted a records search for the proposed project through the California Historical Resources Information System South Central Coastal Information Center (SCCIC), housed at California State University, Fullerton. The records search included a review of all recorded archaeological resources and previous studies within the APE and general vicinity.

Previous Cultural Resources Investigations

According to the search results, 13 cultural resources studies have been conducted within a 0.5-mile radius of the APE (as shown in **Table 1**). Approximately 50 percent of the searched radius was covered in these previous studies. Out of these 13 studies, two of them (SB-05816, and 07459) overlap nearly 90 percent of the APE, including adjacent roads.

TABLE 1
PREVIOUS CULTURAL RESOURCES INVESTIGATIONS

SCICC (SB-)	Author	Title	Year
01566	Brock, James, John F. Elliott, Benjamin Resnick, And William A. Sawyer	Santa Ana River Upstream Alternatives, Cultural Resources Survey	1986
01754	Hatheway, Roger G.	Historical And Architectural Evaluation, Seven Oaks Dam Bridges	1987
01783	Hornbeck, David And Howard Botts	Seven Oaks Dam Project: Water Systems	1988
02652	Mckenna, Jeanette A.	Results Of An Archaeological Monitoring Program For The Greenspot Road Pipeline Along Greenspot Road, East Highlands, San Bernardino County, California	1992
02685	Mckenna, Jeanette A. And Leta J. Franklin	Archaeological Testing And Mitigation Of Adverse Impacts At Ca-Sbr-7166h, An Historic Habitation Site, East Highlands, San Bernardino County, California	1992
02853	Foster, John M., James J. Schmidt, Carmen A. Weber, Gwendolyn R. Romani, And Roberta S. Greenwood	Cultural Resource Investigation: Inland Feeder Project, MWD Of Southern Ca	1991
04067	Tang, Bai Tom	APN: 297-021-04, -05 & The Southern Portion Of 097-021-12, Due Diligence/Feasibility Investigation, City Of Highland, San Bernardino County, Ca. 3PP	2004
04831	Brunzell, David and Curt Duke	Cultural Resource Assessment: Upper Santa Ana River Wash Land Management and Habitat Conservation Plan, San Bernardino County, California.	2005

SCICC (SB-)	Author	Title	Year
05816	Schmidt, Tiffany A. And Janis K. Offerman	East Branch Extension Phase II Archaeological Survey Report, San Bernardino County, California.	2007
06035	Goodwin, Riordan	Archaeological Survey Report for The Greenspot S-Curve Realignment, City Of Highland, San Bernardino County, California.	2008
07459	Tang, Bai "Tom", Terri Jacquemain, Harry Quinn, Daniel Ballester, And Nina Gallardo	Identification and Evaluation of Historic Properties: Enhanced Recharge Facilities for Santa Ana River Water Diverted by Valley District and Western under Water Rights Permit Project (Phase 1 & 2), Cities of Highland and Redlands, San Bernardino County, California.	2012
07569	Mcdougall, Dennis P. And Jill A. Onken	Inland Feeder Pipeline Project: Final Synthetic Report of Archaeological Findings, San Bernardino County, California.	2003
08040	Tang, Bai "Tom" And Michael Hogan	Historical/Archaeological Resources Survey Report Tentative Tract Map no. 18893, City of Highland, San Bernardino County, California	2015

NOTES: APE = area of potential effects; APN = assessor's parcel number, SCCIC = South Central Coastal Information Center.
SOURCE: SCCIC 2023.

Previously Recorded Cultural Resources

The records search results indicate that a total of 18 cultural resources have been recorded within the general vicinity of the APE (Table 2). Of the 18 resources, 8 are historic-period archaeological sites (P-36-005526, 006068, 010184, 033121, 033122, 033123, 033124, and 060194); two are historic isolates (P-36-023403 and 024382); and eight historic built-in structures (P-36-006847, 006848, 007051, 007165, 007215, 023404, and 024384).

TABLE 2
PREVIOUSLY RECORDED CULTURAL RESOURCES

P Number (P-36-)	Permanent Trinomial (CASBR-)	Description	Dates Recorded	NRHP/CRHR Eligibility
005526	005526H	Historic site: building foundation and refuse scatter	1985; 1987	Unknown
006068	006068H	Historic site: pipes, cans, and domestic debris	1987; 2018	Not Evaluated
006847	006847H	Historic site: (Structure, Site) segment of the historic alignment of the Southern California Railroad	1987; 2018	Ineligible
006848	006848H	Historic site: irrigation ditch	1990; 1992; 1993; 2006; 2010; 2017	Ineligible
007051	007051H	Historic Structure: Irrigation system	1990; 1994; 2003	Unknown
007165	007165H	Historic Site: Plunge Creek Bridge	1996; 1987	Ineligible
007215	007215h	Historic Site: road, orchard, irrigation canal and standpipe irrigation system.	1992	Unknown
010184	010184H	Historic Site: trash scatter	1999	Unknown
010681	010681H	Historic Site: building foundations	2002	Ineligible
023403	—	Historic Isolate: wooden and metal objects	2009	Unknown
023404	014789H	Historic Structure: pipe culvert	2009	Ineligible
024382	—	Historic Isolate	2012	Unknown

P Number (P-36-)	Permanent Trinomial (CASBR-)	Description	Dates Recorded	NRHP/CRHR Eligibility
024384	—	Historic Site: Water Conveyance	2018	Ineligible
033121	033121H	Historic Site: Refuse scatter	2018	Not Evaluated
033122	033122H	Historic Site: Refuse scatter	2018	Not Evaluated
033123	033123H	Historic Site: Refuse scatter	2018	Not Evaluated
033124	033124H	Historic Site: Refuse scatter	2018	Unknown
060194	—	Historic: Porcelain fragments and a license plate	1984	Unknown

Native American Heritage Commission

The Native American Heritage Commission (NAHC) maintains a confidential Sacred Lands File that contains information about sites that hold a traditional, cultural, or religious value to the Native American community. On December 14, 2023, a request was made to the NAHC for a Sacred Land File search for the APE. On January 5, 2024, the NAHC responded to the request. The NAHC provided a list of tribal contacts and recommended that they be contacted to obtain additional information. The Sacred Lands File search has been included in **(Appendix B-Confidential)**.

Historic Maps and Aerial Photographs

ESA examined historic maps and aerial photographs to discern historical information about the APE and to contribute to an assessment of the APE's archaeological sensitivity. Available maps include the 1954 and 2012 Redlands USGS 7.5-minute topographic quadrangle (TopoView 2023). Historic aerial photographs were available for the years 1938, 1959, 1980, 2002, 2005, 2010, 2013, and 2020 (Historicaerials.com 2023); 1933, 1952, 1954, and 1966, (FrameFinder 2023); 1995, 2002, 2003, 2005, 2018, and 2023 (Google Earth Pro 2024).

The 1901 topographic map depicts Greenspot Road and Cone Camp Road (unnamed) adjacent to the APE, although these are shown as unknown. A review of the 1954 topographic map shows the area is primarily undeveloped, with only two buildings in the southwest section of the APE. On the next available topographic map from 2012, no buildings near Cone Camp Road are visible.

The 1938 aerial photograph displays a historic-era resource within the APE. The northwest area of the APE was undeveloped. By 1959, more buildings (features) could be observed as part of the historic-era resource within the APE while the rest of the area remained the same. After 1966, housing growth can be observed on the east side of the APE. The 1995 aerial is missing features present in the 1966 aerial, indicating historic-era resources were removed sometime between the two images were taken. In the 2002 aerial image, it is evident that the last poultry farm standing within the southern portion of APE is no longer present. After 2005, the APE was turned into a staging area for the Inland Feeder construction. In the northeast section of the APE, the

SBVMWD Foothill Pump Station building is visible in aerial imagery. From 2006 to 2023, the south area remained a graded empty lot while the north section of the APE presented changes, including a pipeline running north to south, the Foothill Pump Station structure, a chain-link fence surrounding the APE and also acting as a divider between the north and south of the APE, and a short, paved road that leads to a graded parking area.

Geologic Map Review

The project area is entirely mapped as Holocene-aged Quaternary alluvial (Qa) “consisting of “sand and clay of valley areas, covered with gray clay soil, including “alluvial pebbly sand adjacent to mountain terranes” (Dibblee and Minch, 2004). Surficial sediment consists of alluvial sediments composed of gravel and sand. The vicinity of the project site also includes Young Alluvial Wash Deposits (Qw), Young Axial-Channel Deposits (Qya3 and Qya4), and artificial fill adjacent to or near the improvements (HDR Engineering, 2022; Morton and Matti, 2001).

Geotechnical Report Review

The geotechnical study was completed by HDR Engineering (2022). They conducted a geophysical survey by their subcontractors (Atlas) on June 24, 2022. In addition to the survey, three test pits were excavated to the maximum depth of 15 feet below ground surface to study the conditions of the project site. The first 5 to 11 feet of the test pit units showed artificial fill, alluvium soils were found beneath the artificial fill and consist of poorly graded sand mixed with gravel, cobbles, and boulders up to 49.6 inches in diameter. (HDR Engineering 2022).

Cultural Resources Survey

Methods

On December 20, 2023, ESA archaeologists Claudia Camacho-Trejo, B.A. and Ellen McIlvain, B.A. conducted an intensive pedestrian survey of the APE. The purpose of the survey was to identify archaeological and built environment resources within the APE. The survey methodology varied depending on the landforms encountered within the APE. Areas with flat terrain and visible ground surfaces were subject to systematic pedestrian surveys with transects spaced between 5 and 15 meters apart (approximately 15 to 45 feet). Areas with limited ground visibility, such as densely vegetated areas, underwent opportunistic surveys, where areas with some ground visibilities were targeted. The APE was verified using the ArcGIS Field Maps application on an Android phone. Photo logs, field observations, and results were documented using Survey 123 with a Samsung 10S device. No subsurface investigation was performed during the pedestrian survey.

Results

No cultural resources were discovered during the survey. The APE is a relatively flat area with SBVMWD Foothill Pump Station’s modern pump structure on the northeast area surrounded by chain-link fences and gates subdividing the area. Soils generally consisted of graded sandy gravel with cobbles, including native vegetation and several trees. However, one modern feature, an F-shaped poured concrete foundation, was documented within the APE. The following paragraphs

describe the results of the survey and the resources encountered during the survey. No artifacts were observed during the survey.

In the northern part of the APE, 5-meter transects were conducted along the chain-link fence with good ground visibility of around 60 to 70 percent. Elsewhere in northern part of the APE, due to a concentration of granite boulders, the Foothill Pump Station building, a depression near a pipeline area, and a graded parking lot area, ground visibility was low (about 10 to 20 percent); an opportunistic survey was conducted in this section of the APE (**Figures 4–6**).

The middle portion of the APE was surveyed using 5-meter transects; ground visibility was excellent (around 80 to 90 percent) due to previous grading and compaction of the area. The soil was composed of imported gravel and silty sand. This section of the APE was highly disturbed and previously used as a parking area, as two track marks are visible all over the area.

Figure 4. General View along Northwest Chain-Link Fence, View NW



SOURCE: Photo by Environmental Science Associates

Figure 5. General View of Depression of the Discharged Pipeline on the Northwest Section of the APE, View NW



SOURCE: Photo by Environmental Science Associates

Figure 6. General View of Granite Boulders, Foothill Pump Station Building and a Plastic Pipe Feature, View SE



SOURCE: Photo by Environmental Science Associates

On the southeast area of APE, an F-shaped concrete foundation was encountered. The foundation measured about 157.2 inches long and 53 inches wide. Based on aerial imagery, the foundation was built between 2012 and 2015 (Historicaerials 2023; Google Earth Pro 2024). This F-shaped concrete foundation was made for a trailer truck previously stationed in this area of the APE. Based on the aerial imagery, it is likely that this section of the APE was previously used as a parking location for trucks and trailers. The F-shaped concrete foundation was in excellent condition, with some spray paint markings and a small wood frame on the edges of the foundation (**Figures 7–8**).

Outside the gated facility, within the southern portion of the project area, visibility was poor (less than 10 percent) in the areas with overgrown vegetation, oversized granite boulders mixed in with modern trash debris; therefore, an opportunistic survey was conducted. Two existing, unpaved two track roads cross west to east in this portion of the APE (**Figures 9–11**).

Figure 7. General View of F-Shape Poured Cement Foundation, View SW



SOURCE: Photo by Environmental Science Associates

Figure 8. Overview F-Shape Poured Cement Foundation, View SW



SOURCE: Photo by Environmental Science Associates

Figure 9. General View of the SOUTH portion of the APE, Granite Boulder and Distribution Pole, View SW



SOURCE: Photo by Environmental Science Associates

Figure 10. General View of Two Track Road Transecting the South APE, View SE



SOURCE: Photo by Environmental Science Associates

Figure 11. Overview of APE, View N



SOURCE: Photo by Environmental Science Associates

Archaeological Sensitivity Assessment

Prehistoric Archaeological Analysis

The potential for prehistoric archaeological deposits is predicated on (1) proximity to permanent or semi-permanent water sources capable of supporting long-term or seasonal occupation of the area; and (2) flat or gently sloped topography conducive to human habitation. Previous research conducted elsewhere in California has indicated that the presence of buried archaeological sites is positively correlated with proximity to water, as well as flat to gently sloped landforms.

Review of the geologic map indicates that the APE is composed of Quaternary-age young alluvial fan, channel, and wash deposits. The review of the geotechnical report also shows a historic disturbance layer of 3 to 5 feet, and an artificial fill composed primarily of sand and gravel to at least 5 to 15 feet below ground surface.

The APE is located on a flat surface, and the closest body of water to the APE (per a review of historical topographic maps) is the Santa Ana River, located approximately 1.12 miles southeast of the APE. The NAHC indicated that the Sacred Lands File search yielded positive results. Based on all these factors, the potential for yielding surficial and not deeply buried prehistoric archaeological resources within the APE is considered to be low to moderate.

Historic Archaeological Analysis

The records search identified 19 historic-period archaeological sites (consisting of remains of irrigation features, concrete foundations/structures, refuse deposits, and bridges) recorded within the general vicinity. The number of historic-period archaeological sites, and historic use of the area within the APE and vicinity, indicate a low to moderate potential of encountering buried historic archaeological resources. The construction of the Inland Feeder conveyance system by the Metropolitan Water District began in 1997 and was completed in 2007. Before the proposed project of Inland Feeder Foothill Pump Station Intertie, the Foothill Pump Station was built in early 2005. Given previous construction, the APE was previously graded and disturbed by the construction of the Inland Feeder conveyance system and the Foothill Pump Station within the APE.

A total of two historic architectural resources are recorded within the general vicinity the APE; however, none of these resources are located within or immediately adjacent to the APE. Therefore, no impacts to historic architectural resources would occur as a result of the proposed project.

Conclusions and Recommendations

No cultural resources were identified as a result of the survey. As such, the proposed project would result in **No Historic Properties Affected** under Section 106 of the National Register and California Register under CEQA and the Project would not result in a direct impact to historical resources.

As a result of the archival research and cultural resources survey conducted for the proposed project, no cultural resources have been identified within the APE. However, the likelihood for encountering subsurface archaeological deposits within the APE during project construction is low to moderate based on the amount of disturbance and fill at the site. In the event that subsurface archaeological deposits are encountered during project implementation, they may qualify as historical resources or unique archaeological resources pursuant to CEQA and may be subject to significant impacts. As such, the following recommended measures for the retention of a qualified archaeologist, cultural resources sensitivity training, construction monitoring, and inadvertent discovery protocols are provided below. Since no cultural resources were identified within the APE, and with implementation of the recommended measures below, the Project would result in less than significant impacts related to archaeological resources.

Recommendations

Worker Archaeological Awareness Training. Because of the potential for the proposed project to encounter archaeological resources, a qualified archaeologist shall conduct worker training prior to the initiation for ground-disturbing activities to inform workers of the types of resources that may be encountered and advise them of the proper handling of such resources.

Inadvertent Discoveries. If archaeological resources are encountered at the project site, the Contractor shall not disturb the resources and shall immediately cease all work within 50 feet of the discovery, notify the Engineer, and protect the discovery area, as directed by the Engineer. The Engineer, with the qualified archaeologist, shall make a decision of validity of the discovery and designate an area surrounding the discovery as a restricted area. The Contractor shall not enter or work in the restricted area until the Engineer provides written authorization.

Should the resource be determined to be potentially significant, a treatment plan shall be prepared. The plan shall be implemented by the qualified archaeologist in consultation with the Metropolitan to provide for the adequate recovery of the scientifically consequential information contained in the archaeological resource. The treatment plan shall include measures regarding the curation of the recovered resources, which may include curation at a public, non-profit institution with a research interest in the materials, if such an institution agrees to accept the material.

Human Remains

In the event that human remains are discovered during excavation/construction activity, Health and Safety Code Section 7050.5, CEQA Guidelines Section 15064.5(e), and Public Resources Code (PRC) Section 5097.98 will apply. The Contractor shall notify Metropolitan at once and not enter or work in the restricted area until the Engineer provides written authorization.

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Appendix A

Personnel Qualifications

Claudia Camacho-Trejo

Cultural Resources Specialist III



EDUCATION

MA (In Progress),
Anthropology, California
State University, Los
Angeles

BA, Anthropology,
California State
University, Los Angeles

AA, Behavioral Studies,
East Los Angeles
Community College

6 YEARS' EXPERIENCE

PROFESSIONAL AFFILIATIONS

Archaeological Institute of
American, since 2016.

Society for California
Archaeology, since 2016.

Golden Key International
Honour Society, California
State L.A. inducted 2015

Lambda Alpha
Anthropological Honor
Society, California State
L.A. inducted 2014

Society of American
Archaeology since 2014

Claudia Camacho-Trejo is an archaeologist with eleven years of experience throughout Eastern Sierra Nevada, the Mojave Desert, the California South Coast, and Mexico. Claudia had focused as a cultural resource specialist the last six years of her career, working as an author and co-author of California Environmental Quality Act (CEQA)-level technical reports, Environmental Impact Report (EIR) sections, Initial Study (IS) sections, archaeological peer reviews, archaeological monitoring reports, and reports under Bureau Land Management requirements. She has performed archaeological excavation and testing, site recordation, laboratory analysis, pedestrian surveys, and construction monitoring. She has experience requesting records searches through several California Historical Resources Information Systems-Information Centers. In addition to her archaeological background, Claudia has coauthored paleo reports.

Relevant Experience

Ten West Link Transmission Line Project, Riverside County, CA and La Paz County, AZ. Senior Cultural Resources Specialist (November 2022 – Present). Environmental Science Associates (ESA) was retained by Delaney Colorado River Transmission LLC to provide archaeological monitoring during construction as well as perform archaeological and historic architectural resource documentation and evaluation in compliance with Section 106, NEPA, and CEQA requirements. The project involves the construction of 125 miles of high voltage electrical transmission line from Tonopah, AZ, to Blythe, CA. The corridor spans numerous federal, state, and private jurisdictions with varied cultural resource requirements necessitating sophisticated tracking and implementation of numerous agency jurisdiction-specific mitigations. The project passes through many Abandoned Mine Land areas and ESA's team has identified, documented, and evaluated a wide array of historic mining and mining related features such as prospects, cairns and claim markers, roads and trails, mine openings, can and other refuse scatters, and other mining related infrastructure. The project footprint also encompasses culturally sensitive areas important to multiple tribes including CRIT. ESA is providing ESA's team is working alongside the construction contractor, several tribes including CRIT monitors, and with the BLM in two states. Claudia was a lithic specialist who conducted a macroscopic lithic analysis on stone tools artifacts recovered during monitoring and excavation activities. She also curated part of the lithics collection at the Pasadena Lab and co-authored parts of the report.

The San Manuel Ancestral Land Exchange, San Bernardino County, CA. Cultural Resources Specialist (May 2022 – Present). Yuhaaviatam of San Manuel Nation, a Federally recognized Indian Tribe, formerly known as the San Manuel Band of Mission Indians and the Forest Service, United States Department Of Agriculture entered into an Agreement to Initiate the San Manuel Ancestral Land Exchange. Environmental Science Associates (ESA) prepared a cultural Resources Assessment in support of the Land Exchange. The study was conducted in compliance with Section 106 of the National Historic Preservation Act



Claudia Camacho-Trejo (Continued)

Cultural Resources Specialist

(NHPA) of 1966 and considered a 2,997-acre study area, comprised of the combined six privately owned Non-Federal Parcels and two USFS-administered Federally Parcels. Claudia authored portions of the reports and conducted a heritage record search.

Caltrans-ROW Project, Olancho, CA. *Archaeologist.* Claudia performed archaeological screening from dewatering dwell spoils to recover cultural artifacts. This task was conducted directly with the tribal monitors and ESA supervisors to ensure the protection of culturally sensitive areas and artifact density areas identified during Phase I & II testing.

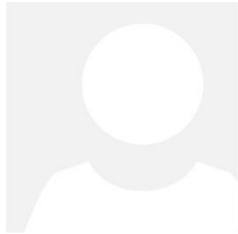
Material Culture Consulting, Pomona, CA. *Archaeologist/Project Analyst.* Claudia conducted pedestrian surveys for SCE pole replacement on public and private lands as an archaeologist. She also performed background research for archaeological studies, including processing records searches. Additional duties included conducting archaeological desktop reviews, including background data, project information, archaeological sensitivity, land ownership, and preparing DPR reports. Claudia then performed cultural resources monitoring during ground-disturbing activities. As a project analyst, Claudia provided Administrative and operational support for Operations and Maintenance Projects with extensive use of Excel, EHSYNC, and Google Earth. With a focus on archaeology, she collaborated with a team of subject matter experts regarding project status, assignment status, pre-construction and post-construction status, and other project issues as appropriate. She compiled and issued Environmental Clearance Documents to clients, project management, and field staff. Claudia prepared project information (e.g., project maps using GIS, Google Earth, or a similar program, and project description) for agency consultation and approvals. She also performed desktop clearances related to deteriorated pole replacements, Master Special Use Permit pole replacements on U.S. Forest Service Land, and private lands for Southern California Edison.

SWCA, Pasadena, CA. *Archaeologist.* Claudia conducted archaeological pedestrian surveys, construction monitoring, and other field or office tasks. She also prepared DPRs, technical reports and organized the company's artifacts collections being deaccessioned to an Orange County Museum.

California State University, Los Angeles Los Angeles, CA. *Graduate Thesis Reviewer.* Claudia conducted thesis examination meetings for Master degree candidates from all fields of study. She met with graduate students on an individual basis to review theses, provide direction regarding format requirements and academic standards, answer questions, and communicate policy guidelines. Claudia recorded the outcome of student thesis appointments, progress and dates of completion and maintained accurate and complete records of each thesis meeting with students to demonstrate progress. She would also communicate with students, to provide thesis related information, review select thesis pages, deadlines, and/or answer questions. She managed all activities related to the completion, submission and reporting and oversaw the thesis publication process with ProQuest and the distribution of hard copies to the academic units.

James J. Clark

Senior Archaeologist



EDUCATION

MA, Museum Studies, New York University

BA, Ancient Near Eastern Civilizations (Egyptology), Minor, Anthropology, University of California Los Angeles

24 YEARS' EXPERIENCE

CERTIFICATIONS/REGISTRATION

Registered Professional Archaeologist, #16586

Meets Secretary of the Interior's PQS for Archaeology

United States Department of Agriculture Organics Act Permit, Principal Investigator

California BLM Permit, Principal Investigator

Meets Caltrans PQS for Principal Investigator

PROFESSIONAL AFFILIATIONS

Society of California Archaeology

Society of Black Archaeologists

James Clark is a Senior Archaeologist with over two decades of experience working in California, as well as the U.S. Northeast and Southeast. James provides technical oversight, expertise, and quality assurance for cultural resources support services, including survey, testing, data recovery, and monitoring projects. He has conducted numerous cultural resource studies for local, state, and federal agencies, as well as private utility companies and corporate entities pursuant to Sections 106 and 110 of the National Historic Preservation Act (NHPA), the National Environmental Policy Act, and the California Environmental Quality Act. James is experienced in Native American coordination and compliance with California Assembly Bill 52. He is also experienced in archaeological curation and collections rehabilitation (36 CFR 79) and is proficient in several collections management and database applications including Gallery Systems/The Museum System, Microsoft Access, and SQL.

James meets the Secretary of the Interior's Professional Qualification Standards for Archaeology (i.e., 36 Code of Federal Regulations Part 61) and is a Registered Professional Archaeologist. Further, he also meets the California Department of Transportation (Caltrans) Professionally Qualified Staff standards at the level of Principal Investigator and is also named on permits to perform archaeological studies for a number of federal, state, and local agencies as well as Native American tribes.

Relevant Experience

Southern California Edison, Rush Creek Hydroelectric System FERC Relicensing Project #1039, Inyo National Forest, Mono County, CA. *Project Manager.*

James coordinated the implementation of the archival research and fieldwork components of the project's Technical Study Plans for archaeological and built environment resources within the proposed APE for the Undertaking. Archival research entailed record searches at the Eastern Information Center and the Inyo National Forest office and an examination of germane documents from various repositories and on-line databases; fieldwork involved an intensive Class III inventory of the project APE. James also participated in project stakeholder meetings, as well as coordinated the preparation of separate Technical Study Reports (TSRs) which included preliminary NRHP eligibility recommendations for resources identified within the APE.

Southern California Edison, Ivanpah-Control Transmission Line Rating Remediation (TLRR) 15 Sites National Register of Historic Places and California Register of Historic Resources Eligibility Evaluations, Inyo County, CA. *Principal Investigator.*

James coordinated the implementation of the project research design for the testing of 15 sites (prehistoric, historical period, and multicomponent) for NRHP and CRHR eligibility. In addition to coordinating testing fieldwork, he also supervised artifact analysis (including obsidian hydration and sourcing) and performed senior review of the technical report and its Department of Parks and Recreation 523 series site form appendix.



James J. Clark (Continued)

Senior Archaeologist

Naval Facilities Engineering Command (NAVFAC) SW Division, Post-Fire Archeological Survey of 2,645 Acres, Naval Weapons Station Seal Beach, Detachment Fallbrook, CA. *Principal Investigator.* This project entailed NRHP Section 110 Class III Inventory of 2,645 acres at Naval Weapons Station Seal Beach, Detachment Fallbrook. James coordinated, co-authored, and provided senior review the project work plan, research design, safety plan, technical report, and Department of Parks and Recreation 523 series site forms. James also supervised the fieldwork phase of the project.

National Park Service, Scorpion Pier Replacement Project, Santa Cruz Island, Channel Island National Park, Santa Barbara County, CA. *Principal Investigator.* As required per a 2017 Programmatic agreement between the NPS and the California State Historic Preservation Office, this project involved archaeological and osteological monitoring during construction-related ground disturbance at Scorpion Pier, Channel Island National Park for NHPA Section 106 compliance. James coordinated monitoring fieldwork and co-authored the technical report.

Property One, LLC. Redlands Packing House District Phase 2, Distillery, Coffee Shop, and Mixed-Use Retail Cultural Resources Investigations, Redlands, CA. *Project Manager.* This project entailed preconstruction and construction cultural resources monitoring, mechanical stripping, trenching, and testing at various parcels overlaying historic Chinatown (i.e., CA-SBR-5314H) and Sonora town in Downtown Redlands, California. James coordinated all phases of fieldwork, ethnographic interviews w/community stakeholders, artifact analysis, and technical report writing.

Naval Facilities Engineering Command (NAVFAC) SW Division, Archaeological Survey of a Portion of the Wilcox Ranch Properties for the Cultural Resources Program, Travis Air Force Base, Solano County, CA. *Principal Investigator.* The project involved an NHPA Section 106 Class III cultural resources inventory of 271- acres of privately owned land in support of a potential land exchange with Travis AFB. James coordinated, co-authored, and provided senior review of the project work plan, research design, safety plan, and technical report. James also supervised the fieldwork phase of the project.

United States Fish and Wildlife Service, Cultural Resources Survey for a Potential Land Exchange at Bitter Creek National Wildlife Refuge, Kern County, CA. *Project Manager.* The project involved an NHPA Section 106 Class III cultural resources inventory of 714- acres at 10 district parcels located within the Bitter Creek NWF, Kern County, California in support of a potential land exchange. James coordinated, co-authored, and provided senior review of the project work plan, research design, safety plan, and technical report. James also supervised the fieldwork phase of the project.

First Solar, LLC., First Solar Desert Quartzite Solar Farm Survey, Blythe, CA. *Project Manager.* The project entailed an NHPA Section 106 Class III archaeological inventory of approximately 5,000 acres of Bureau of Land Management land near Blythe, California for a 300-megawatt power-generating solar photovoltaic facility. James coordinated the production of the project work plan, research design, safety plan and technical report. James also supervised the fieldwork phase of the project.

Naval Facilities Engineering Command (NAVFAC) SW Division, Section 110 Site Recordation, Evaluation, and Data Recovery at Locus 1019, CA-IMP-8396, Naval Air Facility, El Centro, CA. *Project Manager.* The project involved an NHPA Section 110 survey, testing, and data recovery at CA-IMP-8396 Locus 1019 which consisted of three house pit house structures, several thermal features, and a midden situated along the maximum high stand shoreline of Lake Cahuilla. James coordinated preparation of the project work plan, research design, safety plan, technical report. James also supervised all three fieldwork phases of the project and coordinated all artifact analysis (including special studies conducted by external analysts).

Sara Dietler

Senior Archaeologist



EDUCATION

BA, Anthropology, San Diego State University

24 YEARS' EXPERIENCE

CERTIFICATIONS/REGISTRATION

California BLM Permit, Principal Investigator, Statewide

Nevada BLM Permit, Paleontology, Field Agent, Statewide

PROFESSIONAL AFFILIATIONS

Society for American Archaeology (SAA)

Society for California Archaeology (SCA)

Sara Dietler is a senior archaeology and paleontology lead with more than 20 years of experience in cultural resources management in Southern California. As a senior project manager, she manages and prepares technical studies to report the findings of archaeological and paleontological surveys to assess a project's potential impacts. She applies her expertise for project-specific as well as on-call contracts for cities, counties, utilities, transportation, and other agencies throughout the state of California.

Sara is well versed in preparing documentation and providing consultation in compliance with the National Historic Preservation Act (NHPA), National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), and the Society of Vertebrate Paleontology guidelines and requirements. Cross-trained in paleontological monitoring, Sara regularly monitors and supervises fossil salvage for public agencies and private developers. She has extensive experience providing oversight for long-term compliance monitoring projects throughout the Los Angeles Basin for archaeological, Native American, and paleontological monitoring projects and provides streamlined management for these disciplines.

Lending her expertise in Native American consultation, Sara also conducts trainings for and provides expert support to clients managing tribal cultural resource issues under CEQA and NEPA for all types of projects and environmental documents.

Relevant Experience

City of Los Angeles, Department of Recreation and Parks, Rancho Cienega Celes King III Swimming Pool. *Project Manager.* Sara is managing the historic recordation and archaeological, paleontological, and Native American monitoring performed for the proposed new Recreation Center and swimming pool at the Rancho Cienega Sports Complex.

City of Los Angeles, Department of Recreation and Parks, San Pasqual Park Restroom Replacement Project. *Project Manager.* Sara managed and oversaw the archaeological and Native American monitoring performed during ground disturbance of the San Pasqual Park Restroom Replacement project. The project required monitoring during construction activities due to known archaeological sensitivity at the park.

City of Los Angeles Department of Public Works – Bureau of Engineering, San Pedro Plaza Park, San Pedro, Los Angeles, CA. *Senior Cultural Resources Project Manager.* Sara provided archaeological and paleontological monitoring support for the San Pedro Plaza Park Project. The project area is located in the City of Los Angeles port district of San Pedro, approximately 26 miles south of downtown Los Angeles. Sara provided quality control oversight for the archaeological and paleontological mitigation. During monitoring on the project, archaeological materials were recovered include refuse associated with park use since it opened in 1889, and historic building debris likely



Sara Dietler (Continued)

Senior Archaeologist

associated with the Carnegie Library which formerly stood on site. Sara also provided recommendations for commemoration and protection of the find.

City of Los Angeles Department of Public Works – Bureau of Engineering, Gaffey Street Pool Construction Monitoring, San Pedro, Los Angeles, CA. *Project Manager.* Sara oversaw the data recovery of a World War I slit trench discovered during project excavation for an ADA compliant sidewalk. Serving as project manager and senior archaeologist on the project Sara provided mitigation recommendations and immediate response to the find.

City of Los Angeles Department of Public Works – Bureau of Engineering, Warner Grand Theatre, Historic Resources Technical Report and Conditions Assessment, San Pedro, Los Angeles, CA. *Project Manager, Report Co-Author.* The Bureau of Engineering's Environmental Management Group requested a Cultural Resources Surveys to inform and guide future rehabilitation or redevelopment efforts of the Warner Grand Theatre. The Warner Grand Theatre designed in the Art Deco-Modern style by master architect B. Marcus Priteca in 1931, and is listed on the National Register of Historic Places, and is designated a Los Angeles Historic-Cultural Monument. ESA prepared a historical resources technical report and conditions assessment report, which provided a comprehensive table of character-defining features along with a conditions assessment of each feature located within the interior and exterior of the Warner Grand Theatre. Sara managed both the archaeological and historic efforts providing one point of contact for the City.

City of Los Angeles Department of Public Works – Bureau of Engineering, Alameda Street Widening Between Harry Bridges Boulevard and Anaheim Street Project, Los Angeles, CA. *Project Manager.* The project included upgrades to Alameda Street and adjoining streets with improved infrastructure to accept increased traffic from existing and proposed projects located primarily within the Port of Los Angeles and the Wilmington Industrial Park and to adequately deal with storm flows. Sara oversaw a California Historical Resources Information System record search of the project area for archaeological and paleontological resources and technical documents regarding the findings and recommendations for construction activities during the proposed project. In addition, she provided and oversaw staff for the Archaeological/paleontological monitoring for geotechnical testing and made further recommendations based on the results of the testing.

Alameda Street Widening Archaeological Resource Assessment; Los Angeles, California; LADPW, Bureau of Engineering. *Project Archaeologist.* During the course of monitoring, archaeologists discovered historic archaeological resources from the late 19th and early 20th century use of the area. Resources discovered included a segment of the original Zanja Madre irrigation system, railroad elements, and the original vitrified brick paving surface of Alameda Street located under the present roadway. Mitigation in compliance with CEQA was developed to address each of the resource types, and included documentation, avoidance, and removal. Brick paving was reused in design of current traffic island as a result of this mitigation. Role included analysis of artifacts, research and development of mitigation during field phase of project and client consultation.

Main Street Archaeological/Paleontological Monitoring and Assessment; Los Angeles, California; City of Los Angeles BOE. *Archaeologist.* Archaeological monitoring resulted in the identification of 18 archaeological features. The features mainly consisted of subterranean architecture such as basements that had been backfilled and capped. Directed construction crew in controlled excavation of these features so that they could be exposed and recorded prior to demolition. Completed the analysis of artifacts recovered and produced a technical report. Directed the archaeological and paleontological monitoring of a police parking facility in downtown Los Angeles. Coordinated with the client and construction personnel throughout the project.



Sara Dietler (Continued)

Senior Archaeologist

RSCV LLC., 670 Mesquit Street and Seventh Street Bridge Evaluation, Los Angeles, CA. *Project Manager and Report Co-author.* ESA prepared an EIR for the 670 Mesquit Street project in Los Angeles. As part of the EIR, a Cultural Resources Technical Report was prepared to determine if the project site was eligible for listing as a historical resource. The project site, originally occupied by the Los Angeles Ice and Cold Storage Company, was determined to lack integrity and therefore, ineligible for listing. Although the core of the building on the project site retained elements of the historic cold storage building, the facility was seismically upgraded resulting in significant alterations to its exterior. In its current condition, the facility does not convey its historical associations. Located south of the project site is the Seventh Street Bridge, which is listed on the California Register of Historical Resources, and eligible for the National Register of Historic Places. The project was also evaluated to determine if it would result in any potential impacts to nearby historic resources, including the Seventh Street Bridge and adjacent railroad tracks. Sara provided oversight and analysis for the preparation of Cultural Resources Technical Report.

Clark Construction, Long Beach Courthouse Project, Long Beach, CA. *Senior Project Archaeologist and Project Manager.* Sara directed the paleontological and archaeological monitoring for the construction of the New Long Beach Courthouse. She supervised monitors inspecting excavations up to 25 feet in depth. Nine archaeological features were recovered. Sara completed an assessment of the artifacts and fossil localities in a technical report at the completion of the project.

Vadnais Trenchless Services, Venice Dual Force Main Project, Venice, CA. *Cultural Resources Lead.* The Venice Dual Force Main Project is an \$88 million sewer force main construction project spanning 2 miles within Venice, Marina del Rey, and Playa del Rey. Contracted to Vadnais Trenchless Services and reporting to the City of Los Angeles, Bureau of Engineering, Environmental Management Group, ESA is serving as the project's environmental resource manager. ESA is serving as the project's environmental resource manager responsible to documenting the project's compliance with required environmental measures. The project is situated in a dense residential neighborhood and has garnered significant public interest. Monitoring includes the electronic collection of compliance data in the areas of aesthetics, biology, cultural resources, noise, vibration, stormwater pollution prevention best management practices, parking, haul routes, tree protection, among others. Sara provides quality control oversight for the archaeological and paleontological mitigation.

Advanced Water Treatment Facility Project Groundwater Reliability Improvement Project, Pico Rivera, CA. *Project Manager.* ESA is providing environmental compliance monitoring for the Water Replenishment District to ensure compliance with the conditions contained in the Mitigation and Monitoring Reporting Programs associated with three environmental documents, including the Final Environmental Impact Report (EIR), a Mitigated Negative Declaration, and a Supplemental EIR, pertaining to three infrastructure components associated with the project. ESA provides general compliance monitoring at varying rates of frequency depending on the nature of the activities and is sometimes on-site for 4-hour spot checks and other times for full 24-hour rotations. The project is located near a residential neighborhood and adjacent the San Gabriel River. Issues of concern include noise, vibration, night lighting, biological resources, cultural resources, and air quality. Sara provides quality assurance and oversight of the field monitoring, and day-to-day response to issues. She oversees archaeological and Native American monitoring for ground disturbance and coordinates all sub-consultants for the project. She also provides daily, weekly, and quarterly reporting on project compliance to support permitting and agency oversight.

Southern California Edison On-Call Master Services Agreement for Natural and Cultural Resources Services, Avalon, CA. *Cultural Resources Task Manager.* Sara provided project management and senior archaeological support for



Sara Dietler (Continued)

Senior Archaeologist

an on-call Master Services Agreement with Southern California Edison for cultural and natural resources consulting services. This contract included numerous surveys and monitoring projects for pole replacements and small- to mid-size reconductoring projects, substation maintenance, and construction projects. Sara served as project manager for more than 25 projects under this contract and served as the go-to person for all water, gas, and power projects occurring in the city of Avalon on Santa Catalina Island. Sara was responsible for oversight of archaeological and paleontological monitors and served as report author and report manager.

Los Angeles Unified School District (LAUSD) Central Los Angeles High School #9; Los Angeles, CA. Senior Project Archaeologist and Project Manager. Sara conducted on-site monitoring and investigation of archaeological sites exposed as a result of construction activities. During the data recovery phase in connection with a 19th century cemetery located on-site, she participated in locating of features, feature excavation, mapping, and client coordination. She organized background research on the cemetery, including genealogical, local libraries, city and county archives, other local cemetery records, internet, and local fraternal organizations. Sara advised on the lab methodology and setup and served as project manager. She was a contributing author and editor for the published monograph, which was published as part of a technical series, "Not Dead but Gone Before: The Archaeology of Los Angeles City Cemetery."

City of Los Angeles Department of Water and Power, Scattergood Olympic Transmission Line, Los Angeles, CA. Report Author. The Los Angeles Department of Water and Power constructed approximately 11.4 miles of new 230 kilovolt (kv) underground transmission line connecting the Scattergood Generation Station and Olympic Receiving Station. The project includes monitoring of construction activities occurring in street rights-of-way. Sara provided final reporting for the long-term monitoring and QA/QC of the field data.

Veterans Administration Long Beach, Long Beach, CA. Senior Project Manager. Sara managed a long-term monitoring project of the Veteran's Administration campus, which also includes implementation of a Memorandum of Agreement, a Plan of Action, and Historic Properties Treatment plan for the mitigation of disturbance to a prehistoric site on the campus.

City of Los Angeles Department of Public Works – Bureau of Engineering, Downtown Cesar Chavez Median Project, City of Los Angeles, CA. Project Manager. As a part of the Specialty Services On-Call Contract with the Bureau of Engineering, Sara assisted the City with a Local Assistance Project requiring consultations with Caltrans cultural resources. Sara was responsible for Caltrans coordination, serving as contributing author and report manager for the required Archaeological Survey Report, Historic Properties Survey Report, and Historical Resources Evaluation Report prepared for the project. Approximate Cost: \$9,956, Project Work Dates: 09/2015 to 12/2015

John Laing Homes, Hellman Ranch Project, Orange County, CA. Lab Director. Sara served as the lab director for the final monitoring phase of the John Laing Homes development project, cataloging and analyzing artifacts recovered from salvage monitoring and test units placed in relation to recovered intact burials. She conducted microscopic analysis of small items such as bone tools and shell and stone beads, directed lab assistants, and oversaw special studies, including the photo-documentation of the entire collection. Sara completed a section reporting on the results of the bead and ornament analysis in the final report, which was published as part of a technical series.

Hansen Dam Golf Course Water Recycling Project, Los Angeles, CA. Senior Archaeologist and Project Manager. Sara directed a phase I historical assessment for the Hansen Dam Golf Course Water Recycling Project located in the Los Angeles' San Fernando Valley. The project included the construction of an outdoor pumping station adjacent to the existing Hansen Tank located at the Los Angeles Department of Water and Power's Valley Generating Station. In addition,



Sara Dietler (Continued)

Senior Archaeologist

a pipeline or distribution line was planned to be installed from the pumping station to the Hansen Dam Golf Course along the Tujunga Wash. The phase I study of this project included mitigation for the effects of the project on the portion of the golf course falling within the area of potential effects, which was potentially sensitive for buried cultural resources as the result of a complex of World War II housing units placed on the site between the 1940s and the 1960s. Sara conducted consultation with the U.S. Army Corps of Engineers regarding the project.

Alameda Corridor-East Construction Authority (ACE). San Gabriel Trench Grade Separation Environmental Compliance Services, San Gabriel, CA. Senior Archaeologist and Report Manager. Sara conducted bead analysis, lab supervision and served as contributing author to data recovery report. She oversaw preparation of a published monograph, which includes the analysis of the feature and artifact recovery from the San Gabriel Mission site, as well as a contextual history of the site and findings. Sara provided artifact analysis and co-authored the artifact chapter in the monograph. The 2.2-mile San Gabriel Trench grade separation project resulted in the lowering of a 1.4-mile section of Union Pacific railroad track in a 30-foot-deep, 65-footwide trench through the city of San Gabriel with bridges constructed at Ramona Street, Mission Road, Del Mar Avenue and San Gabriel Boulevard, allowing vehicles and pedestrians to pass over the tracks. Proximity to the San Gabriel Mission provided sensitivity for cultural resources and a number of known archaeological resources in the project site. The cultural resources support was a multi-year effort consisting of Phase II testing, data recovery, and monitoring resulting in some of the most important finds known to the region.

Coachella Flats Wind Energy Repower Environmental Surveys, Coachella, CA. Senior Cultural Resources Task Leader. Sara served as Senior Cultural and Paleontological manager providing management and oversight for the surveys and reporting. She conducted coordination with the client and the U.S. Bureau of Land Management. Sara provided cultural resources, paleontological resources, and biological resources services in support of an Environmental Impact Report for the project.

Los Angeles County Department of Public Works (LACDPW), Topanga Library Project, Topanga Canyon, CA. Project Manager. Sara supervised the archaeological monitoring effort and directed data recovery of findings for the library project as part of an LACDPW On-call Contract. Construction included the installation waterlines along the roadway outside of the main project area. Monitoring resulted in the discovery of materials associated with the recorded archaeological site CA-LAN-8. Sara prepared a Data Recovery Plan and Research Design to mitigate the disturbance to the known site during installation of a water main for the library project. The resources were identified and evaluated for eligibility to the National Register of Historic Places. During the project, Sara worked closely with the LACDPW to assist them in mitigating the effects of the project as well as coordinating with Caltrans who had oversight on the project. Approximate Cost: \$145,000.00, Project Work Dates: 01/2009 to 12/2012

Pacific Gas & Electric (PG&E) North American Electric Reliability Corporation Support; Multiple Counties, CA. Senior Cultural Resources Specialist. Sara provided recommendations on archaeological, historic, and paleontological sensitivity based on desktop research via Geographic Information Systems, Google Earth, historic maps and aerials, and the National Geological Map database to determine sensitivity of cultural resources within the right-of-way for eight different transmission line projects. She supported PG&E Land and Environmental Management and PG&E Electric Transmission with cultural, and paleontological resource sensitivity assessments and other compliance efforts.

Pacific Gas & Electric (PG&E) Vallejo Substation B Reconductoring Projects Cultural Resources Support, Vallejo, CA. Senior Project Manager. Sara provided oversight of archaeological and historic evaluation of the property. The



Sara Dietler (Continued)

Senior Archaeologist

project consisted of an evaluation of a PG&E substation for potential historical register listing and conducted a cultural resources sensitivity desktop review.

Interstate 5 High Occupancy Vehicle Lanes Project, Orange County, CA. *Cultural Resources Task Manager.* Sara directed the Orange County Transportation Authority (OCTA) Interstate 5 (I-5) High Occupancy Vehicle (HOV) Lanes Project, which involves improvements to I-5 between State Route (SR) 55 and SR-57 and included a phase I study. Orange County Transportation Authority and the California Department of Transportation (Caltrans) served as the overseeing agencies. She coordinated with planners, other resource managers, and Caltrans. Sara completed analysis of existing conditions, conducted an archaeological survey, and produced an Archaeological Survey Report following Caltrans guidelines.

Holland Partners, Sixth and Bixel Project, Los Angeles, CA. *Project Manager.* Sara managed a monitoring phase of the project for a Holland Partners mixed-use development in downtown Los Angeles, which included the recovery of fossils such as marine invertebrates, sharks, and a partial whale. She conducted coordination with the Los Angeles Natural History Museum regarding preparation and curation of the whale fossil.

Los Angeles Department of Water and Power, Elysian/USC Water Recycling Project Initial Study/ Environmental Assessment, Los Angeles, CA. *Project Manager.* Sara worked on the Initial Study/Mitigated Negative Declaration and an Environmental Assessment/Finding of No Significant Impact to construct recycled water pipelines for irrigation and other industrial uses serving Los Angeles Department of Water and Power customers in downtown Los Angeles, including Elysian Park. The U.S. Environmental Protection Agency is the federal lead agency. Sara prepared two technical reports and a treatment plan for archaeological, historic, and paleontological resources identified during the phase I assessment.

Recurrent Energy, Kern County Solar Energy Projects, Kern County, CA. *Project Manager/Senior Archaeologist.* Sara provided cultural resources, paleontological resources, and Native American monitoring services for five separate solar photovoltaic projects for Recurrent Energy. The five projects include a total of 626 acres of previously undeveloped land in the eastern portion of the county. Sara served as project manager for all five projects and Senior Archaeologist providing client coordination and oversight of paleontological monitoring and reporting.

City of Beverly Hills, Purple Line Extension Project Independent Compliance Manager, Beverly Hills, CA. *Supervisor.* ESA conducted general compliance monitoring under contract to the City of Beverly Hills to ensure project compliance with the Memorandum of Agreement between the City of Beverly Hills and LAMetro during the advanced utilities relocation and construction of Section 1 of the Metro Purple Line Extension. In this role, ESA was responsible for compliance oversight of provisions in a Memorandum of Agreement between Metro and the City of Beverly Hills. Significant issues included traffic, pedestrian access, haul routes, and noise. Sara provided scheduling and oversight of the field monitoring and day-to-day response to compliance issues.

Crystal Geyser Roxane, Cabin Bar Ranch Water Bottling Facility Slowdown Lane, Inyo County, CA. *Project Manager, Senior Archaeologist.* Crystal Geyser Roxane proposed to construct a slowdown lane on the west side of U.S. Highway 395 for the spring water bottling facility, requiring an encroachment permit from Caltrans. ESA conducted testing at two National Register-eligible sites in accordance with Caltrans requirements. ESA evaluated the portions of the sites within the encroachment permit area and found that these areas did not contain sufficient data to address National Register criteria. Sara obtained necessary permitting, strategized and authored treatment plans in coordination with Caltrans



Sara Dietler (Continued)

Senior Archaeologist

archaeologist, Caltrans Environmental, Permitting, the Tribe and the client team. She also oversaw compliance with treatment plan during monitoring. Approximate Cost: \$34,000, Project Work Dates: 05/2016 – 02/2017

El Camino Real Bridge Replacement, Atascadero, CA. *Paleontological Project Manager.* Sara oversaw the preparation of all California Environmental Quality Act/National Environmental Policy Act documentation, survey, technical studies, and permitting, for the replacement of the El Camino Real Bridge over Santa Margarita Creek in Atascadero. Caltrans was the overseeing agency on the project and all reporting was prepared in accordance with the Caltrans Standard Environmental Reference for paleontology. Approximate Cost: \$8,600, Project Work Dates: 09/2015 to 12/2015

Orange County Parks Cooper Center Curation Project, Orange County, CA. *Project Manager.* Sara served as project manager and senior cultural resources report author and reviewer. ESA conducted this study on curation in California at the request of Orange County Parks. The purpose of the study was to conduct market research and collect a data set of curation costs and long-term management models used by curation facilities that house collections throughout California. The facilities in the data set included museums, universities, colleges, archaeological centers, cultural centers, tribal curation facilities, historical societies, city facilities, and county facilities.

Peters Canyon Channel Reuse Pipeline Project, Irvine, CA. *Paleontological Lead.* Sara served as paleontological lead for the paleontological monitoring report for the Peters Canyon Channel Reuse Pipeline Project. The project will divert high selenium nuisance surface and groundwater flows from the channel to the Orange County Sanitation District for treatment and reuse. Sara provided reporting and analysis of fossils encountered during construction.

City of Burbank, Avion Project Environmental Impact Report, Burbank, CA. *Paleontological Lead.* Sara is preparing the cultural resources section and overseeing the paleontological technical report for the Environmental Impact Report in support of a General Plan Amendment to change the General Plan land use designation from Airport to Golden State Commercial/Industrial for the westernmost 18-acre portion of the 60-acre project site.

County of Los Angeles, Rancho Los Amigos South Campus Environmental Impact Report (EIR), Los Angeles, CA. *Paleontological Lead.* Sara provided review and oversight of the paleontological technical report in support of the project EIR. ESA led the CEQA process on behalf of the County, including preparation of all technical studies in support of a full-scope EIR for the Rancho Los Amigos South Campus Project. This includes a historic district evaluation, archaeological surveys, traffic, water supply, arborist services, and all other California Environmental Quality Act-required topics.

The Onni Group, Los Angeles Times Mirror Square Environmental Impact Report, Los Angeles, CA. *Cultural Resources Task Leader.* Sara served as cultural lead, providing coordination and senior oversight for reporting on archaeological, tribal, and paleontological resources. The project includes the development of two mixed-use residential towers and the rehabilitation of the historic Los Angeles Times structures on a 3.6-acre city block within the Center City/Historic Core District of Downtown Los Angeles. Approximate Project Cost: \$219,400 (as of 2018)

Publications and Presentations

2015. Artifacts. In *Abundant Harvests: The Archaeology of Industry and Agriculture at San Gabriel Mission*. Dietler, John, Heather Gibson, and James M. Potter, eds. SWCA Anthropological Research Paper Number 11. SWCA Environmental Consultants. Pasadena, California.



Sara Dietler (Continued)

Senior Archaeologist

2013. To the West of the Mission: Artifacts and Mortuary Patterns of the 19th Century Los Angeles Plaza Cemetery. Oral Presentation at the Society for California Archaeology Meeting, Honolulu, HI Session: California Mission Archaeology in the Los Angeles Area.
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Appendix B
Sacred Land File Search
**(Confidential – Not for public
distribution)**

Appendix C

DPR Forms

(Confidential – Not for public distribution)

Appendix E
**Paleontological Resources
Assessment Report
(Public Version)**

Public Draft

INLAND FEEDER-FOOTHILL PUMP STATION INTERTIE PROJECT

Paleontological Resources Assessment Report

Prepared for

The Metropolitan Water District of Southern
California
700 North Alameda Street,
Los Angeles, California 90012

May 2024



Public Draft

INLAND FEEDER-FOOTHILL PUMP STATION INTERTIE PROJECT

Paleontological Resources Assessment Report

Prepared for:

The Metropolitan Water District of
Southern California
700 North Alameda Street,
Los Angeles, California 90012

May 2024

Prepared by:

ESA
626 Wilshire Blvd. Suite 1100
Los Angeles, CA 90017

Principal Investigator:

J.D. Stewart, PhD.

Authors:

J.D. Stewart, PhD.
Fatima Clark, B.A.

Project Manager

Sara Dietler, B.A.

Project Location:

Redlands (CA) USGS 7.5-minute Topographic Quad
Township 1 South, Range 3 West, Section 1

Acreage: Approx. 10.4 acres

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INLAND FEEDER-FOOTHILL PUMP STATION INTERTIE PROJECT

Paleontological Resources Assessment Report

Introduction

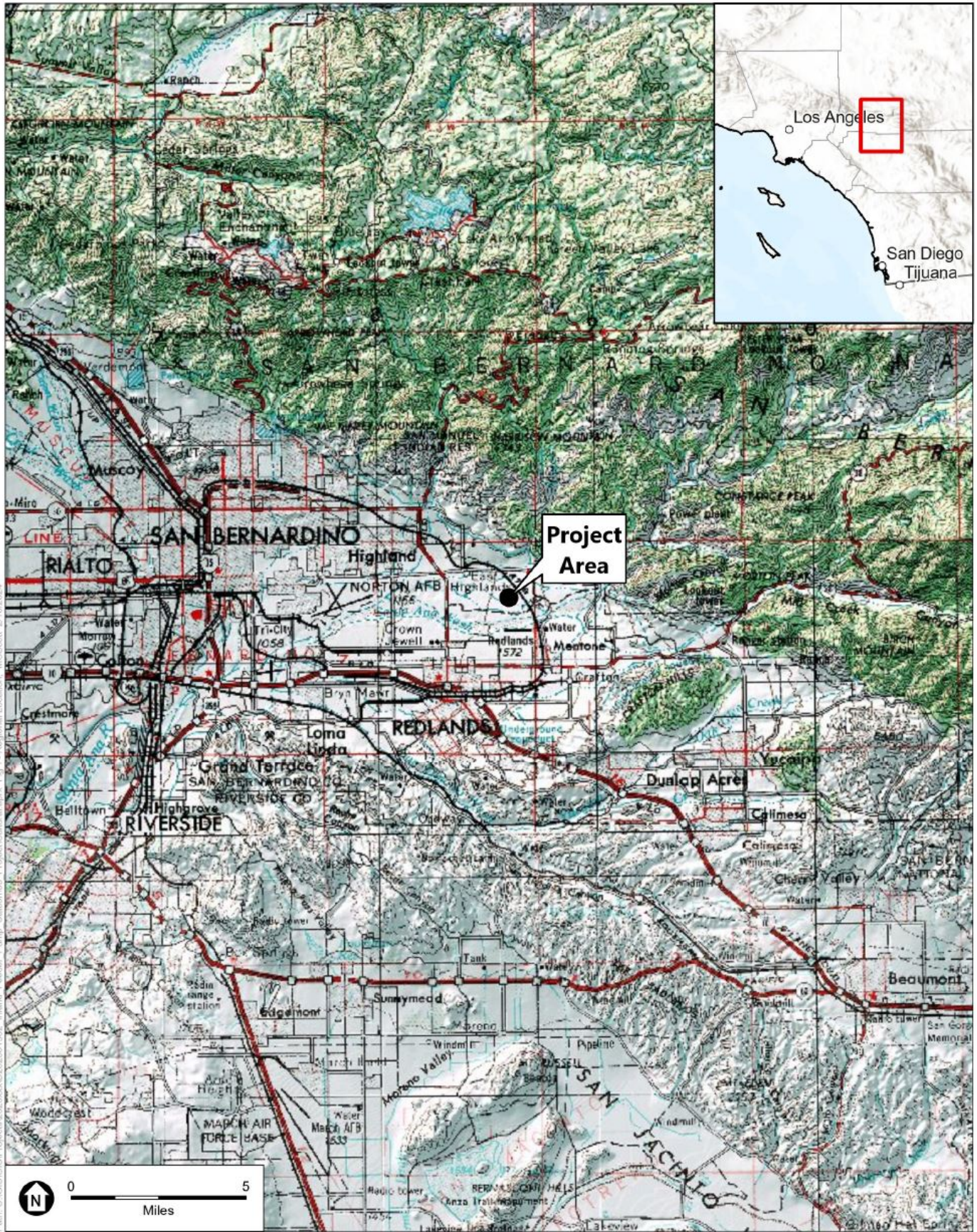
Environmental Science Associates (ESA) has been retained by The Metropolitan Water District of Southern California (Metropolitan) to conduct a paleontological resources assessment for the Inland Feeder-Foothill Pump Station Intertie Project (proposed project). The Inland Feeder is owned and operated by Metropolitan and conveys approximately 1.7 billion gallons of water daily throughout its distribution system. Located in western San Bernardino and Riverside counties, the Inland Feeder is a 44-mile-long, 12-foot-diameter conveyance pipeline supporting reliable water delivery to Southern California. The primary purpose of the Inland Feeder is to connect State Water Project supplies to Metropolitan's Eastern Distribution System. Metropolitan is the lead agency under the California Environmental Quality Act (CEQA).

Project Personnel

ESA personnel involved in the preparation of this report are as follows: J.D. Stewart, Ph.D., Principal Investigator of paleontology and report author; Fatima Clark, B.A., report contributor; Sara Dietler, B.A., project manager; and Chance Scott, GIS specialist. Resumes of key personnel are included in **Appendix A**.

Project Location

The proposed project is located on an approximately 10-acre, triangular-shaped parcel immediately south of the intersection of Cone Camp Road and Greenspot Road in Highland, California (assessor's parcel numbers 1210381240000 and 1210381250000; referred to in this report as the project area) (**Figure 1**). The site is generally accessible from State Route 210 (Foothill Freeway), located roughly 3.5 miles to the west. Local access to the project area is provided by Cone Camp Road, with an entrance gate immediately north and south of the Foothill Pump Station. The majority of the site is secured with chain-link perimeter fencing. The project area is bounded by Greenspot Road and residential development to the north, the Santa Ana River and open space to the south, and large-lot, single-family residences and open space to the east and west.



SOURCE: ESA, 2024

Inland Feeder Pump Station

Figure 1
Regional Location



Metropolitan owns 5.47 acres of the project area and has easement rights to approximately 1 acre of the project area. The San Bernardino Valley Municipal Water District (SBVMWD) and the San Bernardino Valley Water Conservation District (SBVWCD) own the remainder of the project area. SBVWCD also owns the parcel directly south of Metropolitan's triangular-shaped fee property. Metropolitan will obtain an additional easement for the SBVWCD property located between the Metropolitan Inland Feeder alignment and its fee property.

The proposed project facilities are situated within Section 1 of Township 1 South, Range 3 West of the Redlands (CA) U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2).

Project Description

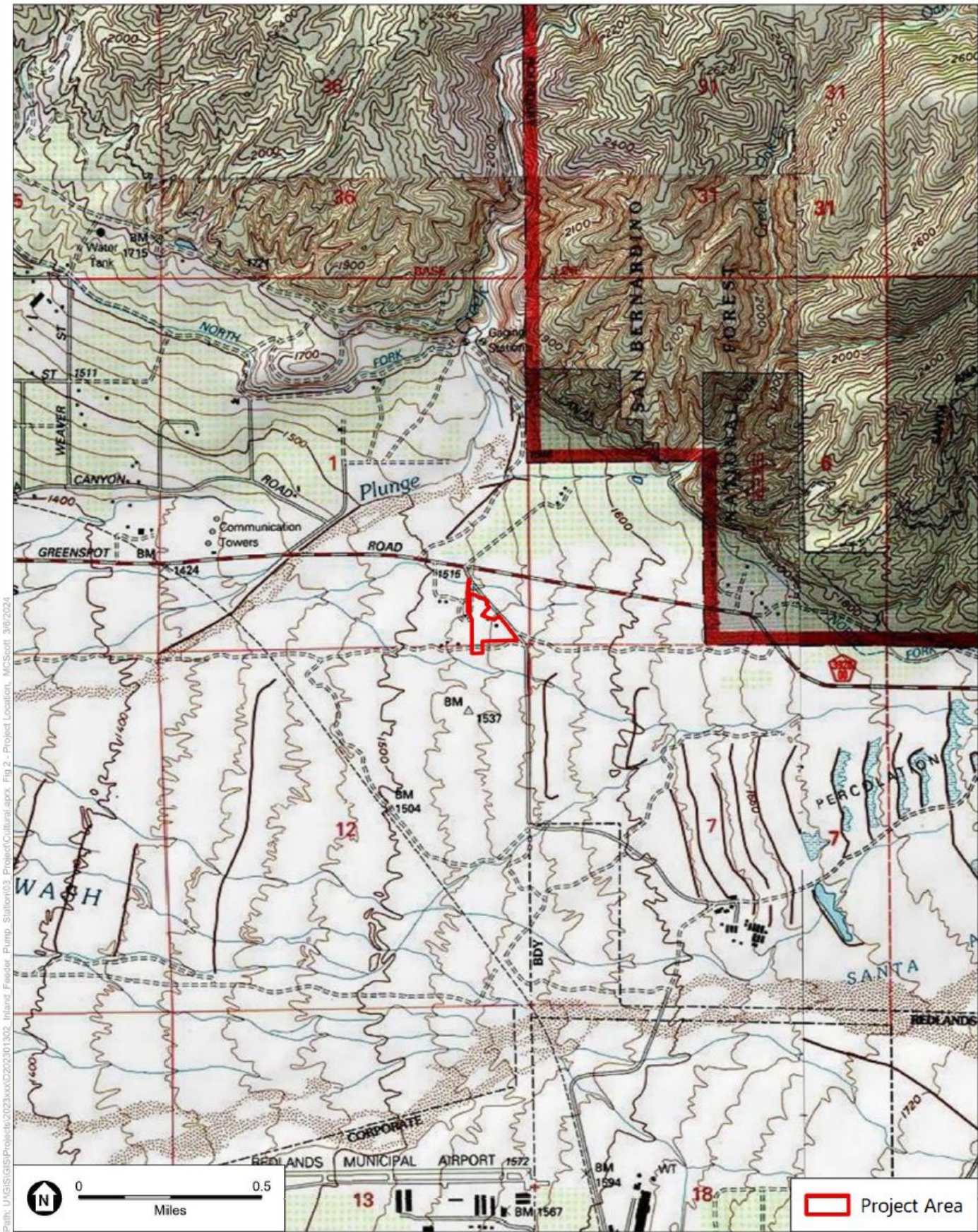
To enhance Metropolitan's water delivery flexibility in response to drought conditions and limited State Water Project (SWP) allocations, Metropolitan is proposing two new pipeline connections between the Inland Feeder and the SBVMWD-Inland Feeder Interconnection Line 1 and SBVMWD's Foothill Pump Station (FPS).

Two new underground pipelines (supply connection and discharge connection), two underground vaults, four aboveground hydropneumatic surge tanks (HST), and associated appurtenant structures would be constructed in two stages as outlined below.

Stage 1 would include construction of the components mainly located within the existing fenced facility. This would include construction of an approximately 400-foot-long, 54-inch-diameter supply connection pipeline, an approximately 750-foot-long, 54-inch-diameter discharge connection pipeline, a 50-foot by 40-foot underground vault, four aboveground HSTs on concrete pads, and appurtenant structures. Additionally, the proposed project would include installation of a new fence-line along the western boundary of the project area to accommodate the supply and discharge connection components.

Stage 2 construction activities would occur along the southern portion of the project area, located mainly outside of the fenced facility, and would include a 45-foot by 40-foot underground vault, a portion of the 54-inch-diameter discharge connection pipeline, all associated appurtenant structures, and final connections to the existing Inland Feeder pipeline.

Most of the construction activities would occur during daylight hours, occasional nighttime construction activities may be required to shut down the Inland Feeder and install the tie-in connection. Operation and maintenance activities at the FPS and Inland Feeder would be similar to existing conditions.



Path: U:\GIS\GIS\Projects\2023000\202301302_Inland_Feeder_Pump_Station\05_ProjectLocation.aprx Fig. 2 - Project Location, MCS\01 3/9/2024

SOURCE: ESA, 2024, USGS, 2023

Topo Quad: Redlands, 1980

Inland Feeder Pump Station

Figure 2
Local Vicinity Map (Topo)



Regulatory Framework

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value that are afforded protection under state laws and regulations. The following section summarizes the applicable state laws and regulations, as well as professional standards provided by the Society of Vertebrate Paleontology (SVP 2010).

State Regulations

California Environmental Quality Act

In California, unique paleontologic resources, sites, and geologic features, particularly with regard to fossil localities, are afforded protection under a number of state environmental statutes, including the California Environmental Quality Act (CEQA). Under CEQA, a lead agency must determine if the project would result in the direct or indirect destruction of a unique paleontologic resource or site or unique geologic feature, and if such impacts would be significant. The CEQA lead agency is responsible for ensuring that feasible mitigation measures are implemented in order to reduce impacts to a less-than-significant level. CEQA does not include a specific definition of “unique paleontological resource or site,” nor does it establish thresholds for significance.

Further guidance can be found in Scott and Springer (2003). Those authors stated that significant paleontologic resources include “fossil remains of large to very small aquatic and terrestrial vertebrates, remains of plants and animals previously not represented in certain portions of the stratigraphy, and fossils that might aid stratigraphic correlations, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, paleoclimatology, and the relationships of aquatic and terrestrial species” (2003:6). Furthermore, they also advised that impacts might be considered less than significant if dense concentrations of plant and/or invertebrate fossil remains were “so locally abundant that the impacts to the resources do not appreciably diminish their overall abundance or diversity” (2003:6).

More recent guidance has been developed by the Society for Vertebrate Paleontology (SVP 2010), which defines significant paleontologic resources as “fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years).”

Therefore, any identifiable vertebrate fossil remains would be considered unique under CEQA, and direct or indirect impacts on such remains would be considered significant. Identifiable invertebrate and plant fossils would be considered unique if they meet the criteria presented above. Determinations shall take into account the abundance and densities of fossil specimens or newly and previously recorded fossil localities in exposures of the rock units present at a project site.

Public Resources Code Section 5097.5

Other state regulations for paleontological resource management are included in PRC Section 5097.5. These statutes prohibit the removal of any paleontological site or feature from public lands without permission of the jurisdictional agency, define the removal of paleontological sites or features as a misdemeanor, and require reasonable mitigation of adverse impacts to paleontological resources from developments on public (state, county, city, district) lands.

Society for Vertebrate Paleontology

The SVP has established standard guidelines (SVP 2010) that outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing professional vertebrate paleontologists adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically provided in its standard guidelines. Most agencies with paleontological resource-specific Laws, Ordinances, Regulations, and Standards (LORS) accept and use the professional standards set forth by the SVP.

As defined by the SVP (2010:11), significant nonrenewable paleontological resources are:

Fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years).

Based on the significance definitions of the SVP (2010), all identifiable vertebrate fossils are considered to have significant scientific value. This position is adhered to because vertebrate fossils are relatively uncommon, and only rarely will a fossil locality yield a statistically significant number of specimens of the same genus. Therefore, every vertebrate fossil found has the potential to provide significant new information on the taxon it represents, its paleoenvironment, and/or its distribution. Furthermore, all geologic units in which vertebrate fossils have previously been found are considered to have high sensitivity. Identifiable plant and invertebrate fossils are considered significant if found in association with vertebrate fossils or if defined as significant by project paleontologists, specialists, or local government agencies.

A geologic unit known to contain significant fossils is considered to be “sensitive” to adverse impacts if there is a high probability that earth-moving or ground-disturbing activities in that rock unit will either directly or indirectly disturb or destroy fossil remains. Paleontological sites indicate that the containing sedimentary rock unit or formation is fossiliferous. The limits of the entire rock formation, both areal and stratigraphic, therefore define the scope of the paleontological potential in each case (SVP 2010).

Paleontological Sensitivity

Paleontological sensitivity is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. In its “Standard Guidelines for the Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources,” the SVP (2010:1–2) defines four categories of paleontological sensitivity (potential) for rock units: high, low, undetermined, and no potential:

- **High Potential.** Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Rock units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcanoclastic formations (e. g., ashes or tephras), and some low-grade metamorphic rocks which contain significant paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils (e. g., middle Holocene and older, fine-grained fluvial sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstones, fine-grained marine sandstones, etc.).
- **Low Potential.** Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some rock units have low potential for yielding significant fossils. Such rock units will be poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule, e. g. basalt flows or Recent colluvium. Rock units with low potential typically will not require impact mitigation measures to protect fossils.
- **Undetermined Potential.** Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine if these rock units have high or low potential to contain significant paleontological resources. A field survey by a qualified professional paleontologist to specifically determine the paleontological resource potential of these rock units is required before a paleontological resource impact mitigation program can be developed. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.
- **No Potential.** Some rock units have no potential to contain significant paleontological resources, for instance high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Rock units with no potential require no protection nor impact mitigation measures relative to paleontological resources.

For geologic units with high potential, full-time monitoring is generally recommended during any Project-related ground disturbance. For geologic units with low potential, protection or salvage efforts would not generally be necessary. For geologic units with undetermined potential, field surveys by a qualified vertebrate paleontologist should be conducted to specifically determine the paleontological potential of the rock units present within the study area.

Methods and Results

The project area was the subject of thorough background research and analysis to assess its paleontological sensitivity. The research included geologic setting, literature, geologic map, and geotechnical report review, a paleontological records search conducted by the Natural History Museum of Los Angeles County (LACM), and a paleontological sensitivity analysis conducted by ESA Principal Paleontologist, J.D. Stewart, Ph.D.

Geologic Setting

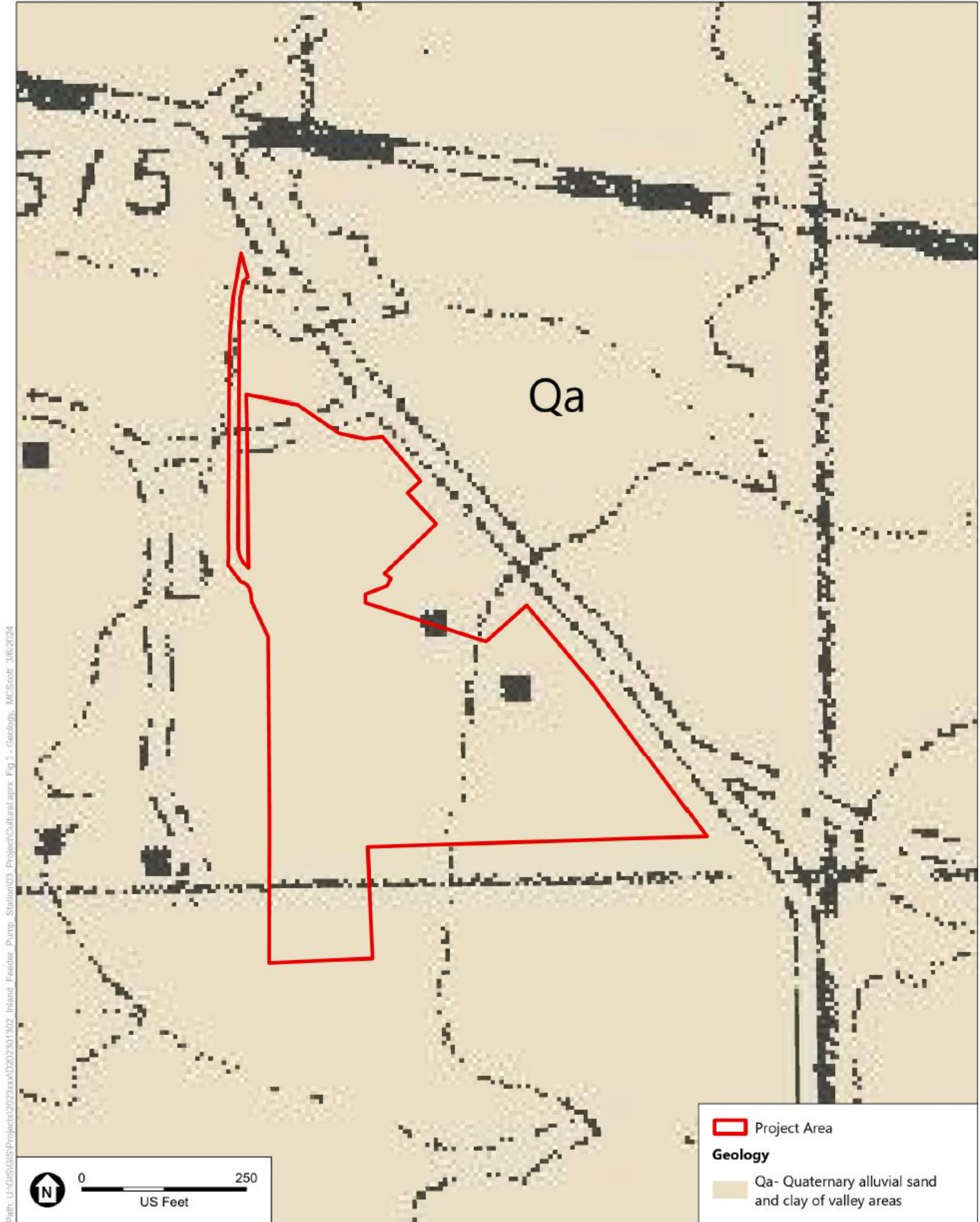
The project area is situated on the limit of the Peninsular and Transverse Range geomorphic provinces. The Peninsular Geomorphic Province follows a northwest to southeast course from Baja California to the Santa Ana Mountains. The Transverse Ranges trend east-west and consist of mountain ranges and valleys from the Mojave and Colorado Desert Provinces to Point Arguello at the Pacific Ocean. The project area is located within the San Bernardino Valley, made up of alluvial deposits created as a result of igneous and metasedimentary rock of the San Bernardino Mountains. The Santa Ana River along with the San Bernardino Mountains are the predominant features in the vicinity. The San Andreas Fault Zone, Crafton Hill Fault, and the San Jacinto Fault are located in the vicinity of the project area (Morton and Miller 2006; HDR Engineering Inc. 2022).

Literature Review

The Pleistocene deposits of the greater Los Angeles area host many significant vertebrate fossils. However, the Project should not disturb Pleistocene alluvium, only Holocene. The late Holocene is considered too young to host significant fossils (SVP 2010). Neither of the compendia of Pleistocene vertebrate fossil localities in California by Jefferson (1991a, b) list any nearby localities not listed in the Report of Bell (2024).

Geologic Map

The project area is entirely mapped as Holocene-aged Quaternary alluvial “sand and clay of valley areas, covered with gray clay soil”, including “alluvial pebbly sand adjacent to mountain terranes” (Dibblee and Minch 2004) (**Figure 3**).



SOURCE: ESA, 2024

Inland Feeder Pump Station

Figure 3
Geologic Map



Geotechnical Report Review

ESA reviewed the geotechnical report prepared by HDR Engineering (2022) for the proposed Project. HDR Engineering (2022) excavated three test pits to a depth of 49.6 feet below ground surface (bgs) to study the conditions of the project area. The first 5 to 11 feet of the test pit units showed artificial fill. Alluvium soils were found beneath the artificial fill and consist of poorly graded sand mixed with gravel, cobbles, and boulders (HDR Engineering 2022).

Paleontological Record

A paleontological resources database search was conducted by the Natural History Museum of Los Angeles County (LACM) on January 7, 2024 (**Appendix B**). The search entailed an examination of current geologic maps and known fossil localities within the project area and vicinity. The purpose of the records search was to (1) determine whether any previously recorded fossil localities occur in the project area or vicinity; (2) assess the potential for disturbance of these localities during construction; and (3) assist in evaluating the paleontological sensitivity of the project area.

Results of the paleontological resources records search conducted by the LACM indicated that no fossil localities lie directly within the project area; however, four fossil localities (LACM VP 1782, 4540, 4619, and 7811) were identified nearby from sedimentary deposits that may be found in the subsurface in the project area (**Table 1**) (Bell 2022).

TABLE 1
LACM FOSSIL LOCALITIES

Locality Number	Formation	Taxa	Depth
LACM VP 1782	Unnamed formation (Pleistocene)	Camel family (Camelidae)	Unknown
LACM VP 4540	Unnamed formation	Horse Family (Equidae)	unknown
LACM VP 4619	Unknown formation (eolian, tan silt;	Mammoth (<i>Mammuthus</i>)	9–11 feet bgs
LACM VP 7811	(Pleistocene, gravel pit)	Whip snake (<i>Masticophis</i>)	100 feet bgs

LACM VP 1782 produced fossil specimens of the camel family (*Camelidae*) at an unknown depth. LACM VP 4540 yielded specimens of the horse family (*Equidae*) at an unknown depth. LACM VP 4619 produced a fossil specimen of mammoth (*Mammuthus*) at 9 and 11 feet bgs. LACM VP 7811 produced a fossil specimen of whip snake (*Masticophis*) at 100 feet bgs.

Paleontological Sensitivity Analysis

The literature and geologic mapping review, as well as the LACM records search results, were used to assign paleontological sensitivity to the geologic units at surface and underlying the project area, following the guidelines of the SVP (2010):

Qa: Holocene alluvium is found throughout the broad coastal valley hosting the project area, bounded outside the project area by uplifted regions of older Pleistocene marine and non-marine deposits. While these Pleistocene units likely underly the younger, Holocene alluvium in the project area, the depth is unknown but most likely lies deeper than the planned excavation based on the geotechnical reports. The Qa throughout the project area is likely less than 5,000 years old and is considered to not contain fossils, if the age is correct. Therefore, this unit is assigned a **Low Potential** to contain paleontological resources.

Conclusions and Recommendations

The Quaternary alluvium underlying the proposed project area is of low paleontological sensitivity, increasing to higher sensitivity with depth. While the exact depth is not known, it likely lies deeper than the planned excavation. However, should aspects of the proposed project excavate below the potential shift from Holocene to Pleistocene alluvium and potentially impact unique paleontological resources. Per Metropolitan's general Standard Practices, a project-specific WEAP training will be prepared and given to all construction personnel. The training will include all potential concerns and considerations related to paleontological resources, including types of paleontological resources that may be encountered and the proper procedures to be enacted in the event of an inadvertent discovery of paleontological resources. In addition, per Metropolitan's paleontological resources Standard Practice, the following standard would be met:

- If archaeological or paleontological resources are encountered at the project site, the Contractor shall not disturb the resources and shall immediately cease all work within 50 feet of the discovery, notify the Engineer, and protect the discovery area, as directed by the Engineer. The Engineer, with the qualified architectural historian, archaeologist and/or paleontologist, shall make a decision of validity of the discovery and designate an area surrounding the discovery as a restricted area. The Contractor shall not enter or work in the restricted area until the Engineer provides written authorization.

Impacts to unique paleontological resources would result in less than significant impacts through adherence to Metropolitan's Standard Practices and local and state regulations.

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- Society of Vertebrate Paleontology (SVP). 2010. Standard procedures for the assessment and mitigation of adverse impacts to paleontological resources.

Appendix A

Personnel

Sara Dietler

Cultural Resources Technical Lead



EDUCATION

BA, Anthropology, San Diego State University

25 YEARS' EXPERIENCE

CERTIFICATIONS/REGISTRATION

California BLM Permit, Principal Investigator, Statewide

Nevada BLM Permit, Paleontology, Field Agent, Statewide

PROFESSIONAL AFFILIATIONS

Society for American Archaeology (SAA)

Society for California Archaeology (SCA)

Sara Dietler is a senior archaeology and paleontology lead with more than 25 years of experience in cultural resources management in Southern California. As a senior project manager, she manages and prepares technical studies to report the findings of archaeological and paleontological assessments to determine a project's potential impacts. She applies her expertise for project-specific as well as on-call contracts for cities, counties, utilities, transportation, and other agencies throughout the state of California. Sara is well versed in preparing documentation and providing consultation in compliance with the National Historic Preservation Act (NHPA), National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), and the Society of Vertebrate Paleontology guidelines and requirements. She has extensive experience managing multidisciplinary projects throughout the Los Angeles Basin including analysis of archaeological, paleontological, tribal, and built environment resources, and provides streamlined management for these disciplines.

Relevant Experience

County of Los Angeles, Department of Public Works, Los Angeles River Bike Path Project, City of Los Angeles and Universal City, California. *Project Manager, Report Author.* ESA completed a cultural resources assessment for the proposed Los Angeles River Bike Path Project. The proposed project consists of constructing approximately 1.5 miles of paved path varying in width from 12 to 14 feet, along the Los Angeles River Flood Control Channel in the cities of Los Angeles and Universal City. Class I bicycle paths, also called shared-use paths or multi-use paths, are for exclusive use by bicyclists, pedestrians, and other non-motorized modes of travel. This project was initiated through the 2012 County of Los Angeles Bicycle Master Plan and a development agreement with NBC Universal with the purpose of installing a Class I bicycle facility. As part of the assessment direct and indirect impacts to the LAR were found to be not significant. Sara provided senior cultural resource expertise, tribal consultation support, authored the report and MND section of the environmental document.

The City of Los Angeles Bureau of Engineering, North Atwater East Bank Riverway Project, Los Angeles, CA. *Project Manager, Report Author.* The North Atwater East Bank Riverway project will convert an existing maintenance road that runs along the LAR Channel into an aesthetically pleasing pathway for use by pedestrians and equestrians. The existing site pathway is an asphalt maintenance road alongside a series of power lines in the Atwater Village area, specifically along the LAR Channel east bank, south of 134 Freeway and north of Los Feliz Boulevard. ESA, working with BOE and the US Army Corps of Engineers, prepared a report compliant with Section 106 of NEPA.

The City of Los Angeles Bureau of Engineering, North Outfall Sewer Rehabilitation Unit 11 – Humboldt St. to Cardinal St. Project, Los Angeles, CA. *Project Manager, Report Author.* ESA completed an Archaeological Resources Assessment, Paleontological Resources



Sara Dietler (Continued)

Cultural Resources Technical Lead

Assessment, and a Cultural Resources Mitigation Monitoring Plan for the North Outfall Sewer Rehabilitation Unit 11 Project. The Project proposed to rehabilitate 3,942 linear feet of 54-inch Burns-McDonnell Semi Elliptical North Outfall Sewer that was constructed in the 1920s. The line was originally constructed with concrete and a layer of tile above the invert and all the way to the crown. Sara prepared the cultural resources study and found a high sensitivity for buried resources. She then worked with BOE staff to create recommendations and PDFs to support the Project.

The City of Los Angeles Bureau of Engineering, CBD Sewer Rehabilitation Units 13 and 14 – Griffith to Grand Avenue Project, Los Angeles, CA. ESA completed an Archaeological Resources Assessment, Paleontological Resources Assessment, and a Cultural Resources Mitigation Monitoring Plan for the CBD Sewer Rehabilitation Units 13 and 14 Project. The Project proposed to rehabilitate 4,828 linear feet of existing circular brick sewer and rehabilitate 13 existing maintenance holes. The Project limits span from the existing maintenance hole 537-03-204 on East Washington Boulevard from Griffith Avenue to Main Street at MH 516-14-149. The CBD Unit 13 proposes to rehabilitate approximately 3,600 linear feet of existing 40 and 45-inch diameter circular brick sewer. ESA prepared the cultural resources study and found a high sensitivity for buried resources as well as a potential to impact the Zanja Conduit System. ESA worked with BOE staff to create recommendations and PDFs to support the Project and design the project around the location of resources

City of Burbank, Avion Project Environmental Impact Report, Burbank, CA. *Paleontological Lead.* Sara is preparing the cultural resources section and overseeing the paleontological technical report for the Environmental Impact Report in support of a General Plan Amendment to change the General Plan land use designation from Airport to Golden State Commercial/Industrial for the westernmost 18-acre portion of the 60-acre project site.

City of Los Angeles Department of Public Works – Bureau of Engineering, Warner Grand Theatre, Historic Resources Technical Report and Conditions Assessment, San Pedro, Los Angeles, CA. *Project Manager, Co-Author.* Sara managed the Cultural Resources Surveys to inform and guide future rehabilitation or redevelopment efforts of the Warner Grand Theatre. The Warner Grand Theatre designed in the Art Deco-Modern style by master architect B. Marcus Priteca in 1931, and is listed on the National Register of Historic Places, and is designated a Los Angeles Historic-Cultural Monument. ESA prepared a historical resources technical report and conditions assessment report, which provided a comprehensive table of character-defining features along with a conditions assessment of each feature located within the interior and exterior of the Warner Grand Theatre. Sara managed both the archaeological and historic efforts providing one point of contact for the City.

Los Angeles Department of Water and Power, Elysian/USC Water Recycling Project Initial Study/ Environmental Assessment, Los Angeles, CA. *Project Manager.* Sara worked on the IS/MND and an EA/Finding of No Significant Impact to construct recycled water pipelines for irrigation and other industrial uses serving Los Angeles Department of Water and Power customers in downtown Los Angeles, including Elysian Park. Sara prepared two technical reports and a treatment plan for archaeological, historic, and paleontological resources identified during the phase I assessment.

JD Stewart, PhD

Paleontologist



EDUCATION

PhD, Systematics & Ecology, University of Kansas

MA, Systematics and Ecology, University of Kansas

BA Degree, Biology, University of Kansas

40 YEARS' EXPERIENCE

CERTIFICATIONS/REGISTRATION

Meets Society of Vertebrate Paleontology definition of qualified professional paleontologist

Orange County Certified Paleontologist

PROFESSIONAL AFFILIATIONS

Society of Vertebrate Paleontology

Research Associate, Natural History Museum of Los Angeles County

Dr. JD Stewart has more than 40 years' experience in the field of paleontology, with 30 years' experience in California. He has authored or co-authored 40 peer-reviewed articles for scientific journals and books. Within these, he has authored or co-authored descriptions of three new genera and three new species.

He is a recognized authority on fossil fishes of Cretaceous rocks of North America and Cenozoic rocks of the western coast of North America. As a result, Dr. Stewart is often called upon to identify paleontological and archaeological specimens. He has served as expert witness for the U.S. Department of Justice.

Dr. Stewart has extensive experience finding and excavating fossils for county, state, and provincial institutions. His field work includes projects in cooperation with the U.S. Bureau of Land Management, National Parks Service, U.S. Army Corps of Engineers, U.S. Navy, U.S. Department of Energy, Federal Aviation Administration, California Energy Commission, Caltrans, and California State Parks. The Bureau of Land Management's national website features one of his excavations from 2004. He has supervised monitoring of construction activity in numerous California counties and municipalities. In addition to fieldwork, he has experience in the supervision of preparators, surveyors, curatorial assistants, and excavators. He also has extensive experience preparing fossils, and has processed, recovered, and identified thousands of microvertebrate fossils.

Relevant Experience

Salton Sea Mitigation Implementation Plan, Riverside and Imperial Counties, CA.

Paleontologist. ESA prepared an adaptive management and monitoring plan for the Salton Sea basin for the Salton Sea Management Program, which is a partnership between the California Natural Resources Agency, DWR, and CDFW. The monitoring plan will prioritize and guide monitoring for biological resources, including avian species, fish and invertebrates, as well as water quality, hydrology, air quality, and socioeconomics. The monitoring plan will inform status and trends of resources, as well as the implementation of future habitat and dust suppression projects. JD compiled the paleontological resource mitigation and monitoring plan and prepared the team for monitoring.

California Water Service Company, Palos Verdes Peninsula Water Reliability Project, Rolling Hills Estates, CA. Paleontologist. ESA provided a full suite of environmental services for the Palos Verdes Peninsula Water Reliability project. The proposed project involves the construction of approximately seven miles of buried potable water pipelines and a new booster pump station to replace the current water distribution system serving the Palos Verdes Peninsula. The large 7-mile utility/infrastructure project, which crossed multiple jurisdictions, including the cities of Rolling Hills Estates and Rancho Palos Verdes, and the County of Los Angeles. JD oversaw paleontological monitoring for reaches 3 and 4 and the pump station, coordinating finds, identifying fossils, and processing the fossils at the lab.



JD Stewart, PhD (Continued)

Paleontologist

Syphon Reservoir Geotechnical Investigations Project IS/MND, Orange County, CA. *Principal Paleontologist.* IRWD implemented the Geotechnical Investigations Project to characterize the geologic and geotechnical conditions of the Syphon Reservoir site to support the potential development of a future reservoir expansion. The Project included a combination of exploratory test pits, borings, and geophysical surveys to characterize the subsurface conditions of the soil at the Syphon Reservoir site and verified the characteristics of the Center Valley Fault. ESA provided extensive biological surveys and cultural surveys, assisted IRWD with AB 52 process for Tribal consultation. Dr. Stewart supervised paleontological monitoring during geotechnical explorations (including borings, exploratory test pits, and abutment/seismic trenches) at the Syphon Reservoir, as the project is located within geologic formations (Silverado and Sespe/Vaqueros) that have a high paleontological potential for yielding paleontological resources. Sediment sampling was conducted to identify the presence/absence of microvertebrate fossils.

Goetz Road Potable Water Storage Tank and Pipeline Project EIR, Riverside, CA. *Paleontologist.* ESA prepared an EIR and conducted supporting biological, archaeological, and paleontological surveys, as well as prepared visual simulations and a shade and shadow report for the Goetz Road Potable Water Storage Tank and Pipeline project. The project would involve construction and operation of an 8-million-gallon potable water storage tank in the City of Perris. JD led the paleontology survey.

City of Menifee, On-Call Consulting and Peer Review Services, Menifee, CA. *Paleontologist.* For 5 years, ESA has provided on-call peer reviews of more than 30 applicant-prepared cultural resources technical reports. ESA has become a trusted advisor to the City. JD has provided peer review of paleontology sections and reports for the City.

Rosedale-Rio Bravo Water Storage District, Onyx Ranch South Fork Valley Water Project EIR, Kern County, CA. *Paleontologist.* ESA prepared the EIR and associated technical studies to support the Onyx Ranch South Fork Valley Water Project. RRBWSD proposes to change the point of diversion and place of use for the water rights associated with Onyx Ranch and Smith Ranch on the South Fork of the Kern River. The intent of the project is to allow water to be delivered in the RRBWSD service area on the San Joaquin Valley floor and used for irrigation and groundwater recharge. The proposed project would assist the RRBWSD in meeting its sustainability goals under the Sustainable Groundwater Management Act. JD prepared the paleontology report to support the CEQA section.

Guild GC, 8777 Washington Boulevard MND, Culver City, CA. *Paleontologist.* ESA prepared an MND to address the proposed redevelopment of an approximately 1-acre property at 8777 Washington Boulevard north of the intersection at Washington Boulevard and National Boulevard in Culver City. The project is proposing a four-story building up to 56 feet. The project is proposing approximately 128,000 square feet of office space on Levels 2 through 4 and 4,500 square feet of retail/food retail on the ground level. JD provided monitoring oversight, oversaw fossil discovery, and processed fossil samples.

I-805 Managed Lanes South Project, Caltrans District 11, San Diego County, CA. *Paleontologist.* Dr. Stewart supervised the pedestrian survey of the project footprint and wrote the Paleontological Resource Assessment.

I-805 North Corridor Project, Caltrans District 11, San Diego County, CA. *Paleontologist.* Dr. Stewart supervised the pedestrian survey of the project footprint and wrote the Paleontological Resource Assessment.

Crestavilla Retirement and Assisted Living Community Project, Laguna Niguel, CA. *Principal Paleontologist.* Dr. Stewart supervised paleontological monitoring during the construction of a new 224-unit retirement and assisted living facility and an approximately 1,870 square-foot Spiritual Resource Center (Shepherd of the Hills Church) within a four-story structure located over a one-level subterranean parking structure. The monitoring led to the identification of a



JD Stewart, PhD (Continued)

Paleontologist

remarkable collection of vertebrate fossils, including the first record of a gulper shark (*Centrophorus*) from any Neogene sediments of coastal California and the first reported specimens of the cookie-cutter shark (*Isistius*) from the Capistrano Formation. Additionally, the project yielded the most complete fossil tuna ever found in California and it probably represents a species new to science.

Palos Verdes Peninsula Water Reliability Project, Palos Verdes Peninsula, CA. *Principal Paleontologist.* Dr. Stewart supervised paleontological monitoring during construction of new potable water pipelines and a new booster pump station to replace the current water distribution system serving the Palos Verdes Peninsula. The monitoring led to the identification and salvage of numerous fossils from Altamira Shale deposits of the Monterey Formation, including fossils of leaf imprints, sardine scales, fish parts (vertebrae, dentary, mandible) and the fossil appendage (dactyl) of a type of Mantis shrimp (Stomatopod). The Mantis shrimp specimen is believed to be the only second known occurrence in southern California of *Angelosquilla altamierensis*, and the only one with a known precise locality and provenience.

Oaks at Monte Nido, Santa Monica Mountains, Unincorporated Los Angeles County, CA. *Principal Paleontologist.* Dr. Stewart was in charge of the preparation of the Paleontological Resources Assessment Report, which included a pedestrian survey. The pedestrian survey yielded the identification of a sandstone boulder that contains a fossil impression of the skull of a small-toothed cetacean “dolphin” and the identification of fossilized shells of pelecypods (e.g., bivalves such as clams, mussels, oysters, and cockles) and gastropods (e.g., snails and slugs). The project proposes the development of 15 single-family residences on separate individual recorded parcels within the Monte Nido Community, along the scenic route of Piuma Road.

Heritage Fields/Great Park Paleontological Review, Orange County, CA. *Principal Paleontologist.* Dr. Stewart conducted Phase I and II paleontological assessments at the Heritage Fields / Great Park in Orange County, California where he and his team discovered significant portions of a Miocene-aged (15 million years ago) whale fossil, and a Pleistocene microvertebrate fauna dating to before 28,000 years ago.

Calnev Pipeline Project, San Bernardino County, CA, and Clark County, NV. *Principal Paleontologist.* Dr. Stewart directed paleontological survey of a 234-mile-long project area in San Bernardino County, California and Clark County, Nevada and wrote the paleontological assessment.

Appendix B
**LACM Records Search –
Confidential – Not for Public
Distribution**

Appendix F

Noise Calculations and Modeling

Project: Inland Feeder
Construction Noise Impact on Sensitive Receptors
Unmitigated

Parameters

Leq to L10 factor	3
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				West 30				East 40				North 250				West 275							
A - Upper South				R1				R2				R3				R4							
Construction Phase Equipment Type	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance				Distance				Distance				Distance							
				(ft)	Lmax	Leq	L10	(ft)	Lmax	Leq	L10	(ft)	Lmax	Leq	L10	(ft)	Lmax	Leq	L10				
				Estimate d Noise Shieldin g, dBA				Estimate d Noise Shielding , dBA				Estimate d Noise Shielding , dBA				Estimate d Noise Shielding , dBA							
Pipeline Trenching and Installation-SC				92 89				90 86				75 71				74 70							
Drum Mixer	1	80	50%	30	84	81	84	0	40	82	79	82	0	250	66	63	66	0	275	65	62	65	0
Excavator	1	85	40%	30	89	85	88	0	40	87	83	86	0	250	71	67	70	0	275	70	66	69	0
Generator	1	82	50%	30	86	83	86	0	40	84	81	84	0	250	68	65	68	0	275	67	64	67	0
Compactor (ground)	1	80	20%	130	72	65	68	0	140	71	64	67	0	350	63	56	59	0	375	62	56	59	0
Compactor (ground)	1	80	20%	230	67	60	63	0	240	66	59	62	0	450	61	54	57	0	475	60	53	56	0
Vacuum Street Sweeper	1	80	10%	230	67	57	60	0	240	66	56	59	0	450	61	51	54	0	475	60	50	53	0
Tractor/Loader/Backhoe	1	80	40%	130	72	68	71	0	140	71	67	70	0	350	63	59	62	0	375	62	59	62	0
Tractor/Loader/Backhoe	1	80	40%	130	72	68	71	0	140	71	67	70	0	350	63	59	62	0	375	62	59	62	0
Welder	1	73	40%	230	60	56	59	0	240	59	55	58	0	450	54	50	53	0	475	53	49	52	0
Vault Structure Excavation-SC				91 87				88 84				73 69				72 68							
Excavator	1	85	40%	30	89	85	88	0	40	87	83	86	0	250	71	67	70	0	275	70	66	69	0
Vacuum Street Sweeper	1	80	10%	130	72	62	65	0	140	71	61	64	0	350	63	53	56	0	375	62	52	55	0
Tractor/Loader/Backhoe	1	80	40%	30	84	80	83	0	40	82	78	81	0	250	66	62	65	0	275	65	61	64	0
Tractor/Loader/Backhoe	1	80	40%	130	72	68	71	0	140	71	67	70	0	350	63	59	62	0	375	62	59	62	0
Vault Structure Installation-SC				92 87				90 84				75 69				74 68							
Compressor (air)	1	80	40%	30	84	80	83	0	40	82	78	81	0	250	66	62	65	0	275	65	61	64	0
Crane	1	85	16%	30	89	81	84	0	40	87	79	82	0	250	71	63	66	0	275	70	62	65	0
Forklift	1	75	10%	230	62	52	55	0	240	61	51	54	0	450	56	46	49	0	475	55	45	48	0
Generator	1	82	50%	30	86	83	86	0	40	84	81	84	0	250	68	65	68	0	275	67	64	67	0
Compactor (ground)	1	80	20%	130	72	65	68	0	140	71	64	67	0	350	63	56	59	0	375	62	56	59	0
Compactor (ground)	1	80	20%	130	72	65	68	0	140	71	64	67	0	350	63	56	59	0	375	62	56	59	0
Vacuum Street Sweeper	1	80	10%	230	67	57	60	0	240	66	56	59	0	450	61	51	54	0	475	60	50	53	0
Surge Tank Excavation-SC				91 87				88 84				73 69				72 68							
Excavator	1	85	40%	30	89	85	88	0	40	87	83	86	0	250	71	67	70	0	275	70	66	69	0
Vacuum Street Sweeper	1	80	10%	130	72	62	65	0	140	71	61	64	0	350	63	53	56	0	375	62	52	55	0
Tractor/Loader/Backhoe	1	80	40%	30	84	80	83	0	40	82	78	81	0	250	66	62	65	0	275	65	61	64	0
Tractor/Loader/Backhoe	1	80	40%	130	72	68	71	0	140	71	67	70	0	350	63	59	62	0	375	62	59	62	0
Surge Tank Installation-SC				94 89				91 86				76 71				75 70							
Compressor (air)	1	80	40%	130	72	68	71	0	140	71	67	70	0	350	63	59	62	0	375	62	59	62	0
Crane	1	85	16%	30	89	81	84	0	40	87	79	82	0	250	71	63	66	0	275	70	62	65	0
Generator	1	82	50%	30	86	83	86	0	40	84	81	84	0	250	68	65	68	0	275	67	64	67	0
Grader	1	85	40%	30	89	85	88	0	40	87	83	86	0	250	71	67	70	0	275	70	66	69	0
Compactor (ground)	1	80	20%	130	72	65	68	0	140	71	64	67	0	350	63	56	59	0	375	62	56	59	0
Compactor (ground)	1	80	20%	130	72	65	68	0	140	71	64	67	0	350	63	56	59	0	375	62	56	59	0
Vacuum Street Sweeper	1	80	10%	230	67	57	60	0	240	66	56	59	0	450	61	51	54	0	475	60	50	53	0
Welder	1	73	40%	230	60	56	59	0	240	59	55	58	0	450	54	50	53	0	475	53	49	52	0

A - Upper South				R1				R2				R3				R4								
Construction Phase	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance (ft)	Lmax	Leq	L10	Estimate d Noise Shielding, dBA	Distance (ft)	Lmax	Leq	L10	Estimate d Noise Shielding, dBA	Distance (ft)	Lmax	Leq	L10	Estimate d Noise Shielding, dBA	Distance (ft)	Lmax	Leq	L10	Estimate d Noise Shielding, dBA	
Pipeline Trenching and Installation-DC				92	89				90	86				75	71				74	70				
Drum Mixer	1	80	50%	30	84	81	84	0	40	82	79	82	0	250	66	63	66	0	275	65	62	65	0	
Excavator	1	85	40%	30	89	85	88	0	40	87	83	86	0	250	71	67	70	0	275	70	66	69	0	
Generator	1	82	50%	30	86	83	86	0	40	84	81	84	0	250	68	65	68	0	275	67	64	67	0	
Compactor (ground)	1	80	20%	130	72	65	68	0	140	71	64	67	0	350	63	56	59	0	375	62	56	59	0	
Compactor (ground)	1	80	20%	230	67	60	63	0	240	66	59	62	0	450	61	54	57	0	475	60	53	56	0	
Vacuum Street Sweeper	1	80	10%	230	67	57	60	0	240	66	56	59	0	450	61	51	54	0	475	60	50	53	0	
Tractor/Loader/Backhoe	1	80	40%	130	72	68	71	0	140	71	67	70	0	350	63	59	62	0	375	62	59	62	0	
Tractor/Loader/Backhoe	1	80	40%	130	72	68	71	0	140	71	67	70	0	350	63	59	62	0	375	62	59	62	0	
Welder	1	73	40%	230	60	56	59	0	240	59	55	58	0	450	54	50	53	0	475	53	49	52	0	
Vault Structure Excavation-DC				91	87				88	84				73	69				72	68				
Excavator	1	85	40%	30	89	85	88	0	40	87	83	86	0	250	71	67	70	0	275	70	66	69	0	
Vacuum Street Sweeper	1	80	10%	130	72	62	65	0	140	71	61	64	0	350	63	53	56	0	375	62	52	55	0	
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Tractor/Loader/Backhoe	1	80	40%	130	72	68	71	0	140	71	67	70	0	350	63	59	62	0	375	62	59	62	0	
Vault Structure Installation-DC				92	87				90	84				75	69				74	68				
Compressor (air)	1	80	40%	30	84	80	83	0	40	82	78	81	0	250	66	62	65	0	275	65	61	64	0	
Crane	1	85	16%	30	89	81	84	0	40	87	79	82	0	250	71	63	66	0	275	70	62	65	0	
Forklift	1	75	10%	230	62	52	55	0	240	61	51	54	0	450	56	46	49	0	475	55	45	48	0	
Generator	1	82	50%	30	86	83	86	0	40	84	81	84	0	250	68	65	68	0	275	67	64	67	0	
Compactor (ground)	1	80	20%	130	72	65	68	0	140	71	64	67	0	350	63	56	59	0	375	62	56	59	0	
Compactor (ground)	1	80	20%	130	72	65	68	0	140	71	64	67	0	350	63	56	59	0	375	62	56	59	0	
Vacuum Street Sweeper	1	80	10%	230	67	57	60	0	240	66	56	59	0	450	61	51	54	0	475	60	50	53	0	
Surge Tank Excavation-DC				91	87				88	84				73	69				72	68				
Excavator	1	85	40%	30	89	85	88	0	40	87	83	86	0	250	71	67	70	0	275	70	66	69	0	
Vacuum Street Sweeper	1	80	10%	130	72	62	65	0	140	71	61	64	0	350	63	53	56	0	375	62	52	55	0	
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Surge Tank Installation-DC				94	89				91	86				76	71				75	70				
Compressor (air)	1	80	40%	130	72	68	71	0	140	71	67	70	0	350	63	59	62	0	375	62	59	62	0	
Crane	1	85	16%	30	89	81	84	0	40	87	79	82	0	250	71	63	66	0	275	70	62	65	0	
Generator	1	82	50%	30	86	83	86	0	40	84	81	84	0	250	68	65	68	0	275	67	64	67	0	
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Compactor (ground)	1	80	20%	130	72	65	68	0	140	71	64	67	0	350	63	56	59	0	375	62	56	59	0	
Compactor (ground)	1	80	20%	130	72	65	68	0	140	71	64	67	0	350	63	56	59	0	375	62	56	59	0	
Vacuum Street Sweeper	1	80	10%	230	67	57	60	0	240	66	56	59	0	450	61	51	54	0	475	60	50	53	0	
Welder	1	73	40%	230	60	56	59	0	240	59	55	58	0	450	54	50	53	0	475	53	49	52	0	

				R1				R2				R3				R4							
Construction Phase Equipment Type	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Estimate d Noise Shieldin g, dBA				Estimate d Noise Shielding , dBA				Estimate d Noise Shielding , dBA				Estimate d Noise Shielding , dBA							
				Distance (ft)	Lmax	Leq	L10	Distance (ft)	Lmax	Leq	L10	Distance (ft)	Lmax	Leq	L10	Distance (ft)	Lmax	Leq	L10				
Pipeline Trenching and Installation-DC				87	84			85	81			75	71			74	70						
Drum Mixer	1	80	50%	30	79	76	79	5	40	77	74	77	5	250	66	63	66	0	275	65	62	65	0
Excavator	1	85	40%	30	84	80	83	5	40	82	78	81	5	250	71	67	70	0	275	70	66	69	0
Generator	1	82	50%	30	81	78	81	5	40	79	76	79	5	250	68	65	68	0	275	67	64	67	0
Compactor (ground)	1	80	20%	130	67	60	63	5	140	66	59	62	5	350	63	56	59	0	375	62	56	59	0
Compactor (ground)	1	80	20%	230	62	55	58	5	240	61	54	57	5	450	61	54	57	0	475	60	53	56	0
Vacuum Street Sweeper	1	80	10%	230	62	52	55	5	240	61	51	54	5	450	61	51	54	0	475	60	50	53	0
Tractor/Loader/Backhoe	1	80	40%	130	67	63	66	5	140	66	62	65	5	350	63	59	62	0	375	62	59	62	0
Tractor/Loader/Backhoe	1	80	40%	130	67	63	66	5	140	66	62	65	5	350	63	59	62	0	375	62	59	62	0
Welder	1	73	40%	230	55	51	54	5	240	54	50	53	5	450	54	50	53	0	475	53	49	52	0
Vault Structure Excavation-DC				86	82			83	79			73	69			72	68						
Excavator	1	85	40%	30	84	80	83	5	40	82	78	81	5	250	71	67	70	0	275	70	66	69	0
Vacuum Street Sweeper	1	80	10%	130	67	57	60	5	140	66	56	59	5	350	63	53	56	0	375	62	52	55	0
Tractor/Loader/Backhoe	1	80	40%	30	79	75	78	5	40	77	73	76	5	250	66	62	65	0	275	65	61	64	0
Tractor/Loader/Backhoe	1	80	40%	130	67	63	66	5	140	66	62	65	5	350	63	59	62	0	375	62	59	62	0
Vault Structure Installation-DC				87	82			85	79			75	69			74	68						
Compressor (air)	1	80	40%	30	79	75	78	5	40	77	73	76	5	250	66	62	65	0	275	65	61	64	0
Crane	1	85	16%	30	84	76	79	5	40	82	74	77	5	250	71	63	66	0	275	70	62	65	0
Forklift	1	75	10%	230	57	47	50	5	240	56	46	49	5	450	56	46	49	0	475	55	45	48	0
Generator	1	82	50%	30	81	78	81	5	40	79	76	79	5	250	68	65	68	0	275	67	64	67	0
Compactor (ground)	1	80	20%	130	67	60	63	5	140	66	59	62	5	350	63	56	59	0	375	62	56	59	0
Compactor (ground)	1	80	20%	130	67	60	63	5	140	66	59	62	5	350	63	56	59	0	375	62	56	59	0
Vacuum Street Sweeper	1	80	10%	230	62	52	55	5	240	61	51	54	5	450	61	51	54	0	475	60	50	53	0
Surge Tank Excavation-DC				86	82			83	79			73	69			72	68						
Excavator	1	85	40%	30	84	80	83	5	40	82	78	81	5	250	71	67	70	0	275	70	66	69	0
Vacuum Street Sweeper	1	80	10%	130	67	57	60	5	140	66	56	59	5	350	63	53	56	0	375	62	52	55	0
Tractor/Loader/Backhoe	1	80	40%	30	79	75	78	5	40	77	73	76	5	250	66	62	65	0	275	65	61	64	0
Tractor/Loader/Backhoe	1	80	40%	130	67	63	66	5	140	66	62	65	5	350	63	59	62	0	375	62	59	62	0
Surge Tank Installation-DC				89	84			86	81			76	71			75	70						
Compressor (air)	1	80	40%	130	67	63	66	5	140	66	62	65	5	350	63	59	62	0	375	62	59	62	0
Crane	1	85	16%	30	84	76	79	5	40	82	74	77	5	250	71	63	66	0	275	70	62	65	0
Generator	1	82	50%	30	81	78	81	5	40	79	76	79	5	250	68	65	68	0	275	67	64	67	0
Grader	1	85	40%	30	84	80	83	5	40	82	78	81	5	250	71	67	70	0	275	70	66	69	0
Compactor (ground)	1	80	20%	130	67	60	63	5	140	66	59	62	5	350	63	56	59	0	375	62	56	59	0
Compactor (ground)	1	80	20%	130	67	60	63	5	140	66	59	62	5	350	63	56	59	0	375	62	56	59	0
Vacuum Street Sweeper	1	80	10%	230	62	52	55	5	240	61	51	54	5	450	61	51	54	0	475	60	50	53	0
Welder	1	73	40%	230	55	51	54	5	240	54	50	53	5	450	54	50	53	0	475	53	49	52	0

Inland Feeder

Table I. Off-Site Structural Vibration Impacts

Receptor	Type of Building	Equipment	Reference Distance	Reference Level ^a	Distance to Receptor (ft) ^b	Impact Level	Threshold	Exceeds Threshold?
				PPV (in/sec)		PPV (in/sec)	PPV (in/sec) ^a	
Residential Buildings	Residential Buildings	Loaded Trucks	25	0.076	25	0.076	0.20	No
		Loaded Trucks	25	0.076	50	0.027	0.20	No
		Loaded Trucks	25	0.076	60	0.020	0.20	No
		Loaded Trucks	25	0.076	75	0.015	0.20	No
		Loaded Trucks	25	0.076	100	0.010	0.20	No

Notes:

a. Caltrans Transportation and Construction Vibration Guidance Manual (2020), Table 15 and Table 18

b. Distances represent the closest measurement from project building footprint to closest building footprint

